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Environmental Cleanup Office

**FINAL**

**FIELD SAMPLING PLAN  
FOR THE  
COEUR D' ALENE BASIN-WIDE RI/FS  
ADDENDUM NO. 15**

**SPOKANE RIVER - WASHINGTON STATE  
COMMON USE AREA  
SEDIMENT CHARACTERIZATION**

Prepared for:

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# Abbreviations and Acronyms

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bgs	below ground surface
°C	degrees Celsius
CDR	Coeur d'Alene River
CDRB	Coeur d'Alene River Basin
CLP	Contract Laboratory Program
CLP-AS	Contract Laboratory Program Analytical Service
cm	Centimeters
DO	dissolved oxygen
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
FSPA	field sample plan addenda
g	Gram
GPS	global positioning system
HDPE	high density polyethylene
Ecology	Washington Department of Ecology
mg/kg	milligrams per kilogram
mL	Milliliter
N	Normal
RI/FS	remedial investigation/feasibility study
SRHD	Spokane Regional Health District
TBD	to be determined
µg/L	micrograms per liter
µm	Micrometer
URSG	URS Greiner, Inc.
USGS	United States Geological Survey
wmg	wide-mouth glass jar

# Field Sampling Plan Addendum 15

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## Spokane River – Washington State Common Use Area Sediment Characterization

Field sampling plan addendum (FSPA) number 15 provides supplemental information to the *Generic Field Sampling Plan and Generic Quality Assurance Project Plan for the Bunker Hill Facility Project* (URS 1997a). The main activity to be conducted under FSPA 15 is the sampling and analysis of common use area beach sand (sediment) at 25 sites along the Spokane River. In addition, particle size distribution tests will be run on samples collected from eight designated sites. The figures, tables, and attachments are located after the references. Section 17.

## 1. Objectives

The overall objectives of this field effort include the following:

- Provide adequate data to support conclusions that areas presently assumed to pose no significant risks to human health are in fact safe and may be eliminated from further investigation.
- Provide adequate data to support an assessment of risks to human health in each investigation location.
- Provide data to support decision-making regarding the need for and nature of potential remedial measures at investigation locations.

To achieve these objectives, the following is planned:

- Collect data on the potentially affected sediment found at common use areas (CUAs) in selected locations along the Spokane River, from the Idaho-Washington border to the confluence with the Columbia River.
- Observe common activities at study locations to provide input to assumptions used in exposure models.
- Supplement existing data for the study locations.

## 2. Assumptions and Scope

### 2.1 Conceptual Site Model (Exposure Pathway Model)

A human health screening-level risk assessment will be conducted using the data gathered under this field sampling plan. The focus of the risk assessment will be human exposure to beach sediments, primarily by incidental soil ingestion resulting mainly from inadvertent hand-to-mouth activity typical of children. Other human exposure pathways will also be examined (e.g., dermal absorption). The

conceptual site model for the Spokane River, Washington, will be developed subsequent to the field sampling event. Exposure is anticipated to primarily occur during recreational use of the beaches but other types of exposure may be important depending on the use patterns at the sites. Information on site use patterns will be collected by observation in the field and by discussions with various groups who have site-specific knowledge of the sampled areas (e.g., the Spokane Tribe and National Park Service).

## 2.2 General Field Tasks

The scope of this sampling effort includes the following tasks.

### *Task 1—Sample Location Verification*

The objectives of Task 1 were:

- To visit as many of the proposed sites as possible to evaluate the following criteria: depositional material, frequency of use, accessibility for small children, and if the beach is private or public.
- To reduce the number of sites for sampling from 46 to 25 using the previously mentioned criteria. Favorable sites for sampling include those that have high deposition, high to moderate frequency of use, and are accessible to children and the public.
- To provide photographs, specific site locations, and directions for accessing the site.
- To identify any constraints that might restrict sample collection such as areas accessible only by boat.

The Spokane Tribe, National Park Service, Spokane Regional Health District (SRHD), and the Washington Department of Ecology (Ecology) contributed to the development of a preliminary list of sites. Attachment A contains the preliminary list and characteristics of the 46 sites considered for inclusion in this FSPA. During the week of August 3, 1999, most of the sites were visited. A member from each agency as well as an EPA staff member and two URSG employees were present during the site visit. Table 1 lists the 25 common use areas selected for inclusion in this FSPA based on the results of this task. USGS cross reference sample locations, comments, and selection criteria are also shown in Table 1. Attachment B contains CUA sample location maps; some maps were provided by the Spokane Regional Health District and others are copies of USGS quadrangles.

During implementation of Task 1, site characteristics (depositional material, frequency of use, accessibility for small children, and private or public beach), site description, location cross reference, and the priority of sampling were recorded on a field form. Attachment A summarizes this data. Attachment C contains photographs of the sites selected for sampling that were taken during the field visit.

### *Task 2—Sediment Sampling*

Beach sediment samples above the water line will be collected from 25 locations along the Spokane River, from the Idaho-Washington border, west to the confluence with the Columbia River. Samples of sediment may be collected below the water line under certain flow conditions (see Section 5.2). The sample results will be used to support an assessment of risks to human health at each site. Section 5 provides sample collection details.

### 3. Data Quality Objectives

The anticipated data analyses, rationale, and analytical methods are presented in Table 3. The data quality objectives (DQOs) for this field effort are presented in Table 4. As shown in these tables, target detection limits for arsenic, cadmium, and zinc are EPA Region IX PRGs based on a cancer risk of  $1E-06$  (arsenic) or a hazard quotient of 0.1. Target detection limit for lead in sediment is based on  $1/10^{th}$  of EPA's soil guidance value (OSWER 9355.4-12). Target detection limits for arsenic in sediment may not be achievable. The laboratory will achieve the lowest detection limit possible for these constituents.

The metals, listed in Table 3, have been selected based on those constituents previously identified as contaminants of concern in the Bunker Hill Superfund site; however, analysis will include a full suite of inorganic constituents.

This FSPA focuses on collecting data for the RI/FS human health site screening process. The data collected will be used to assess potential human health risk from exposure to media at beach areas.

It will also be used to evaluate the need for and preliminary extent of remedial action at selected study sites. Other ongoing studies along the Spokane River focus on ecological systems and risks. The data produced by implementation of this FSPA may contribute information to the ecological assessment, however, detection limits and constituents covered are based on human health risk assessment needs.

### 4. Background

The U.S Geological Survey (USGS) was tasked by the EPA to assess the extent of the dispersion of trace element-rich sediments from the outlet of the Spokane River at the north end of Lake Coeur d'Alene, in Idaho, to the point where the Spokane River joins Lake Roosevelt in Washington. This task, conducted during the fall of 1998 and February of 1999, consisted of the following characteristics: the upper 2 centimeters and deeper cores of river bed sediment were collected, samples were collected at least every 5 miles, and the sample locations were randomly selected sites within a fixed grid system (USGS 1998). As a result of this sampling effort, concentrations of lead in fine sediment were detected above the human health screening value of 1,400 ppm, established for recreational beach sites around Lake Coeur d'Alene.

The Spokane River is a recreational area that offers people from in and out of state many different recreational opportunities. For this plan, twenty-five publicly and privately owned locations and developed recreational areas were identified along the Spokane River between the Idaho-Washington border and the confluence with the Columbia River. The privately owned locations (tribal lands) are easily accessible and known to be used by the public.

Based on these known public uses of common access areas on the Spokane River and possible risks to human health, it is important to sample sediment in these areas. In order for the EPA to assess the potential risks associated with exposure to contaminants in common use areas, a standardized investigation is needed. Implementing this FSPA will provide the EPA with adequate information regarding concentrations of metals of concern in sediment found at points of human exposure (common use areas) within the investigation vicinity. However, it is not possible to sample all of the locations where human contact with sediments is anticipated.

## 5. Sample Collection

This section describes how the number of samples for each site was determined, a summary of sediment sampling protocols, and additional sampling requirements. The sampling team will follow the sampling protocols detailed in the *Generic Field Sampling Plan and Generic Quality Assurance Project Plan for the Bunker Hill Facility Project* (URS 1997a) (Section 4.2.3) and *Health and Safety Plan for the Coeur d'Alene River Basin Project* (URS 1997b).

### 5.1 Sample Number Determination

EPA Risk Assessment Guidance indicates that, when conducting HHRA, the exposure concentration for the reasonable maximum exposure should be the 95 percent upper confidence limit (UCL) of the mean concentration at an exposure place. In theory, a 95 percent UCL can be calculated for any number of samples of three or greater, but for small sample sizes, and depending on the underlying statistical distribution, the 95 percent UCL may exceed the highest concentration sampled.

The goal of determining human health risks based on the 95 percent UCL of the mean can be accomplished with greater than three samples. A relationship established by Conover (1980) (Attachment D) was used to establish a sampling effort that permits a confidence level to be stated regarding the relationship between the values sampled and the population median. The relationship is:

$$N = \frac{\ln \alpha}{\ln Q}$$

Where N = sample size, Q = a selected quantile, and  $\alpha$  is the probability that the population median would exceed the highest sample value. If  $\alpha = 0.05$ , and  $Q = 0.5$ , then a sample size of five would yield greater than a 95 percent confidence that the population median is equal to or exceeded by the highest value sampled. Thus, a sample size of five provides an estimate that the maximum value sampled should approximate the 95 percent UCL. If the selected probability is a 99 percent confidence level, 7 samples are needed. Using this approach to determine the number of samples needed allows a 95 percent UCL to be calculated based on the appropriate statistical distribution for each location in the HHRA.

For the common use area beaches along the Spokane River, a 99 percent confidence limit has been selected to determine the number of samples needed for the HHRA. Therefore, a minimum of 7 randomly-collected samples of dry beach sediment will be taken at these locations.

### 5.2 Sediment

Sediment above the water line will be collected from 0 to 1 foot below ground surface, using decontaminated shovels or stainless steel trowels. Surface debris such as leaves and grass will be removed prior to sample collection. Residual material will be returned to the hole. All sediment samples (except those specified in Section 5.3) will be sieved by the laboratory as per guidance from EPA (80-mesh; 175 microns) (Kissel, Richter et al. 1996) (Driver, Konz et al. 1989) so that particles of the size expected to adhere to skin will be analyzed (i.e., the sieved fraction will be analyzed for all samples). The sieve size (80-mesh; <175 microns) was selected: 1) based on a review of the soil adherence literature and 2) for consistency with soil and sediment data collected at the Bunker Hill Superfund site and other locations in the Coeur d' Alene River Basin.



The study locations are characterized by sloped beaches with rectangular or irregularly shaped areas as demonstrated in the photographs in Attachment C. For most sites the assumption has been made that, for any one spatial sampling area, the sampling medium is homogenous. Therefore, the primary sampling method that will be used on beaches is a randomization scheme based on transects perpendicular to the river. Seven samples will be collected from the randomly selected locations established along each transect. Figure 1 demonstrates the sampling scheme and procedures for regular and irregular shaped areas.

The water levels in the Spokane Arm of Lake Roosevelt are expected to be at 1,280 feet above sea level, indicating below the-water-line sampling will not be necessary. The water level at the time of sampling will be confirmed with the U.S. Army Corps of Engineers or USGS contact (Ray Smith - 509-353-2633). Water levels from Twin Falls dam to the Idaho border are assumed to be at low stage. Again, stage levels will be confirmed in the field by checking USGS gaging stations. If water levels are not at low stage, then shallow sediment samples will be collected below the water line from 0 to 6 inches below ground surface. Water levels at time of sampling will be recorded in the field logbooks.

While sampling on tribal lands, a tribal elder and archeological technician must accompany the sampling team because tribal human remains and/or cultural resources may be found. Because the entire sampling area has been used by native peoples in the past, the tribal cultural group will also accompany the field crews during the sampling of lands not currently part of the reservation. If any archaeological items are uncovered during sample collection, the procedures in Attachment F will be followed.

In addition to collecting sediment samples, the following activities will be performed:

- Photographs will be taken at the site (include roll number, frame, date, description, and direction).
- Information will be collected in the logbook: date, time, equipment, task (what team plans to accomplish that day), current and previous weather conditions, field team names, site location and conditions, specific details of observed activities and area use, water level at the site (feet), sample collection information [site ID, location ID (1 to 7), depth interval (feet), Regional tracking number, CLP number, URSG sample number, time, date, matrix/sample type (include MS/MSD, duplicates, equipment rinsates), and sediment descriptions] and decontamination of equipment.
- Sites will be mapped on grid paper, including: site name/number, scale, waterline, north arrow, dimensions of site, sample locations, GPS coordinates, boundary features, quad name, reference points (Ø), and randomization data (see attached example to Figure 1).

### **5.3 Bulk Sampling**

At nine sites (specified in Table 2) the sampling team will collect split samples from each of the seven sampling locations. Seven bulk samples will be submitted to the laboratory for total metal analysis, and seven samples will be submitted for 80-mesh sieving and total metal analysis. Bulk samples will be field sieved through a 10-mesh to remove large particles. The material passing through the sieve will be submitted to the laboratory for analysis.

## 5.4 Bank- Deposit Profile Sampling

Locations have been identified where significant depositions of finer-grained sediments occur. At these locations, bank-deposit profile sampling will be performed. This sampling approach is designed to identify deposition patterns which may create concentration gradients perpendicular to the river banks.

At eight sites (specified in Table 2) the sampling team will perform bank-deposit profile sampling to identify potential elevation-concentration gradients. Seven composite samples will be collected at evenly distributed locations along transects that are perpendicular to the river. Figure 2 demonstrates the sampling scheme and procedures for bank-deposit profile sampling. Also, the sampling team will collect enough sediment for grain size analysis. The percentage of grain sizes will be determined for the following intervals: 4-mesh, 10-mesh, 40-mesh, 80-mesh, 200-mesh, and 230-mesh. The 80-mesh and 230-mesh screens have been added to the standard method, and will be spelled out as additional requirements on the chain of custody forms.

## 6. Site Boundaries

A Global Positioning System (GPS) will be used at each common use area to accurately identify the boundaries of the site. At a minimum, readings will be collected from four locations (i.e., the four corners of the site). The "boundaries" of each site may be nondistinct (e.g., no fence lines or marked property boundaries). They will be based on either property boundaries or professional judgement of the sampling team. Areas not based on property boundaries will be based on visual characteristics indicating common use or information obtained from a knowledgeable party regarding the extent of the area used for recreational activities. The data collected will be in state plane feet, NAD '83 and the following will be recorded in the logbook: site ID, date, corner (NW, NE, etc.), northing, and easting. (Northing and easting coordinates are a grid system used to measure a location specific to a region.)

## 7. Laboratory Analyses

All of the samples will be submitted to a laboratory for the analyses identified in Table 3. The total number of environmental and quality assurance samples anticipated to be collected for Task 2 (sediment sampling) is summarized below:

- Sediment sampling—294 sediment samples plus 30 duplicates (324 total)
- Quality assurance—7 equipment rinsate samples (assumes a 7-day effort)

A total of 331 samples are scheduled to be collected as shown in Table 5.

## 8. Field Sample Identification

All samples will be labeled with the unique field identifier, URSG sample number, date and time of collection, sampler's initials, and chemical analyses to be conducted. Field identifiers will be used to identify the sampling location; however, a unique URSG sample number will be assigned to each sample for subsequent tracking of the samples and resulting data.

## 9. Sample Handling Protocol

Sample handling requirements are summarized in Table 6.

## 10. Laboratories

Laboratories assigned to perform the analysis of the samples collected for this field sampling effort have not yet been assigned. Table 5 summarizes the number of samples and sample containers required for this project. Arrangements for laboratory analysis will be coordinated through the EPA Work Assignment Manager (Bruce Woods - 206-553-1193) and URSG Analytical Chemist (Todd Goins - 206-674-1843). The samples will be tracked using EPA assigned numbers and chain of custody forms, and URSG sample numbering system and chain of custody forms. See Attachment E for sample handling procedures, and examples of field forms and chain of custody paperwork. The EPA sampling numbers and the URSG sample numbers for this sampling effort have not yet been assigned. The sample location will be noted on the chain of custody forms and in the field logbook as well as through the GPS tracking system.

## 11. Quality Assurance

In order to follow the procedures as outlined in the *Generic Field Sampling Plan and Generic Quality Assurance Project Plan for the Bunker Hill Facility Project* (URS 1997a), one of every ten samples will be a duplicate sample and one of every 20 samples will be designated MS/MSD for quality assurance purposes. Additionally, one rinsate sample will be collected daily. Rigorous double-checking of field forms, COC paperwork, and sample packing will be conducted daily. Attachment E contains sample packing requirements and examples of the chain-of-custody paperwork to be used for this fieldwork.

## 12. Mobilization

Mobilization of field gear from Seattle to Spokane will be accomplished by shipping the field gear to the CH2M HILL office in Spokane, Washington. The URSG/CH2M HILL field crews and potentially owners/responsible agents of the common area being sampled will be present during all fieldwork. Access to sample sites will be by vehicles using roads (either surface or highway) whenever possible. If the location of the area to be sampled is not near a road, the field crew will walk to the site, carrying whatever gear will be necessary. Some sites may be accessed by boat.

## 13. Property Access

While this fieldwork focuses on common access areas, sites also require notification of the owner or responsible agency. Prior to collecting samples, the owner or responsible agency (e.g., local parks department) will be contacted and informed of the planned activity. As mentioned previously, a tribal elder and archeological technician must accompany the sampling team. It is anticipated that, for all common areas, this notification is adequate to allow for field work to commence. No private property will be sampled without owner permission. If private property has been sampled, a sample receipt will be given to the property owner (URSG will retain a copy) detailing the type and number of samples collected, the date, field team names, and recipient signature (if possible).

## 14. Project Schedule

It is expected that this sampling effort will require approximately 2 days each to mobilize and demobilize (total 4 days), and 1 week to collect the sediment samples. Table 7 summarizes the schedule for conducting this fieldwork.

## 15. Project Contacts

Table 8 summarizes the contacts for conducting this fieldwork.

## 16. Health and Safety Plan

The *Health and Safety Plan for the Coeur d'Alene River Basin Project* (EPA 1997b) will be used for the work performed during this project.

## 17. References

- Conover, W.J. 1980. *Practical Nonparametric Statistics*, 2nd ed. John Wiley and Sons, N.Y.
- Gott, G. and J. Cathrall. 1980. *Geochemical-Exploration Studies in the Coeur d'Alene District, Idaho and Montana*, Geological Survey Professional Paper 1116. January 1, 1980.
- U.S. Environmental Protection Agency (EPA). 1997a. *Generic Field Sampling Plan and Generic Quality Assurance Project Plan for the Bunker Hill Facility Project*. Prepared by URS Greiner and CH2M Hill under Contract No. 68-W9-0054. Seattle, Washington. July 30, 1997.
- \_\_\_\_\_. 1997b. *Health and Safety Plan for the Coeur d'Alene River Basin Project*. Prepared by URS Greiner under Contract No. 68-W9-0054. Seattle, Washington. Document Control Number 4162500.0671.05.b. October 20, 1997.
- U.S. Geological Survey (USGS). 1998. *Technical Work Plan for U.S. Geological Survey Studies in Support of Spokane River Basin RI/FS*. Prepared for U.S. Environmental Protection Agency, Region 10. Seattle, Washington. September 30, 1998.
- Driver, J. H., J. J. Konz and G.K. Whitmyre (1989). "Soil adherence to human skin." Bull Environ Contam Toxicol 43(6): 814-20.
- Kissel, J. C., K. Y. Richter and R. A. Fenske (1996). "Factors affecting soil adherence to skin in hand-press trials." Bull Environ Contam Toxicol 56(5): 722-8.

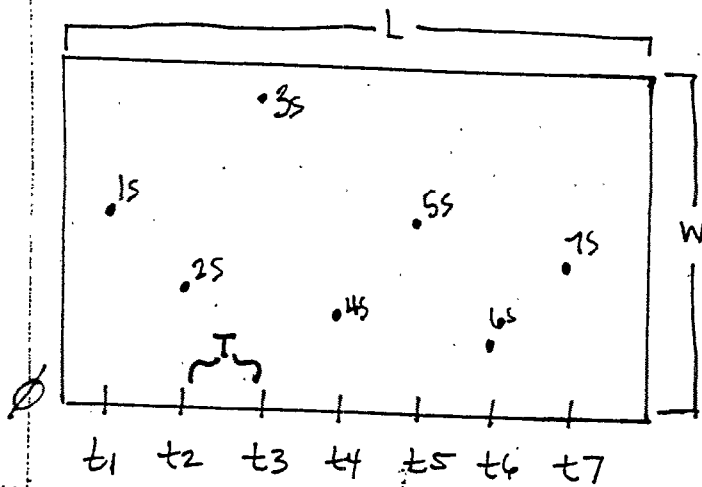
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### **Figures**

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**Figure 1 - Dry Beach Sampling Scheme Diagrams (Example A & B)**  
**Figure 2 - Bank-Deposit Profile Sampling Scheme Diagram**

# Figure 1 - Dry Beach Sampling Scheme Diagram (Continued On Page 2)



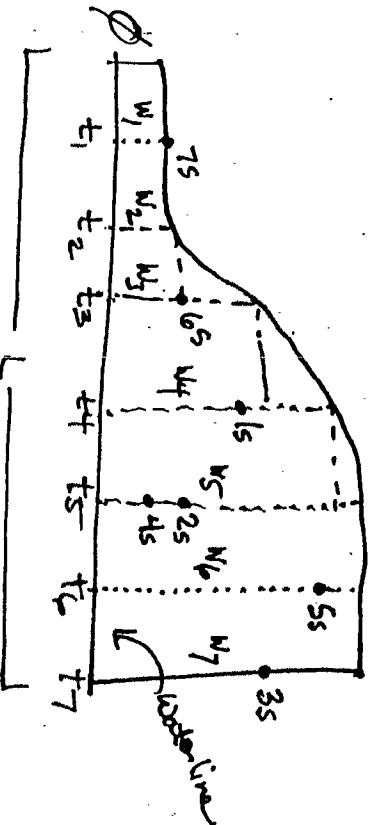
## A. Regularly Shaped Area

1. Measure length ( $L$ ) and width ( $W$ ) of area.
  2. Divide length ( $L$ ) by number of sample locations ( $T$ ) to determine distance between transects ( $T$ ).
  3. Designate your starting point ( $O$ ) at the waterline; generate a random percentage and multiply by the distance between transects ( $T$ ) to determine distance from start ( $O$ ) to the first transect ( $t_1$ ).
  4. The next transects ( $t_2, t_3, t_4, \dots$ ) will be distance ( $T$ ) apart from each other.
  5. At each transect ( $t$ ), multiply a random percentage by the distance up the beach ( $W$ ) to determine sample locations ( $1s, 2s, 3s, \dots$ ).
- (See attached Example A)

# Figure 1 - Dry Beach Sampling - Shore Diagram

Continued

## B. Irregular Shaped Area



1. Follow steps 1-4 from above (except do not measure width).
2. Once the transects ( $t_1, t_2, \text{etc.}$ ) have been established measure the width ( $W_1, W_2, \text{etc.}$ ) of each transect.
3. Calculate the cumulative distance of each transect width ( $W_1, W_2, \text{etc.}$ ) and total cumulative Distance (TCD) ( $W_1 + W_2 + W_3, \text{etc.} = \text{TCD}$ ).
4. Multiply a randomly generated percentage by the TCD to determine the Sample Distance.
5. Determine which transect the sample location will be on by looking at the sample distance.
6. Subtract the cumulative distance from the previous transect to determine how far up the transect to place the sampling location (15).
7. Continue the process for each transect. (See attached Example B)

Total length = 600 ft  
Total width = 50 ft

## Site 1

Beach Below Wand Bridge

之

Horizontal  
Scale

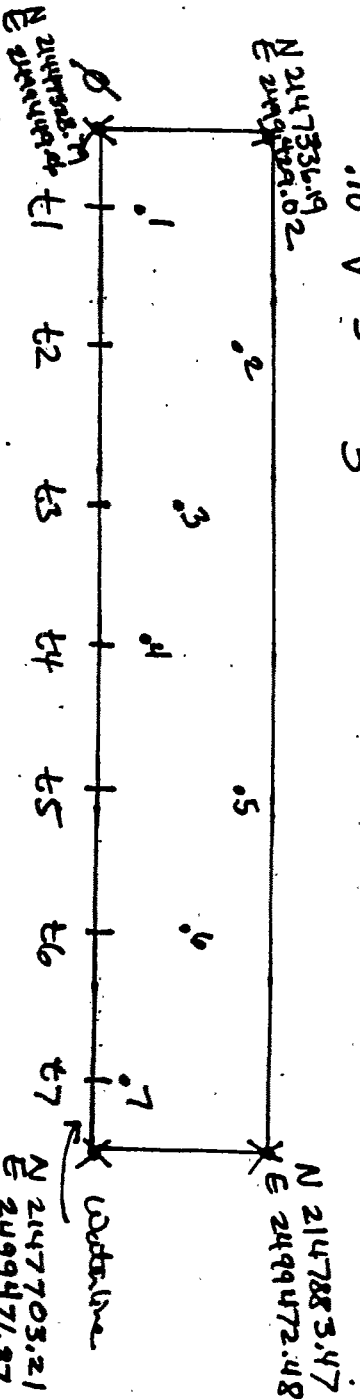
1 sq = 20 ft  
1 bk = 100 ft - (wind)

### Vertical Scale

144 = 1044

$$1 \text{ kb} = 50 \text{ Gt (1-indr)}$$

Sample Locations	Random %	Distance up beach (ft)
1	.24 x 50	12
2	.85	43
3	.43	22
4	.43	13
5	.86	43
6	.47	24
7	.10	5



<u>Transect locations</u>		$600 \div 7 = 86 \text{ ft}$	<u>Distance from <math>\phi</math> in feet</u>
t1	$.549 \times 86$	$= 46$	
t2	$46 + 86$	$= 132$	
t3	$132 + 86$	$= 218$	
t4	$218 + 86$	$= 304$	
t5	$304 + 86$	$= 390$	
t6	$390 + 86$	$= 476$	
t7	$476 + 86$	$= 562$	

### Example - Regularly Shaped Area

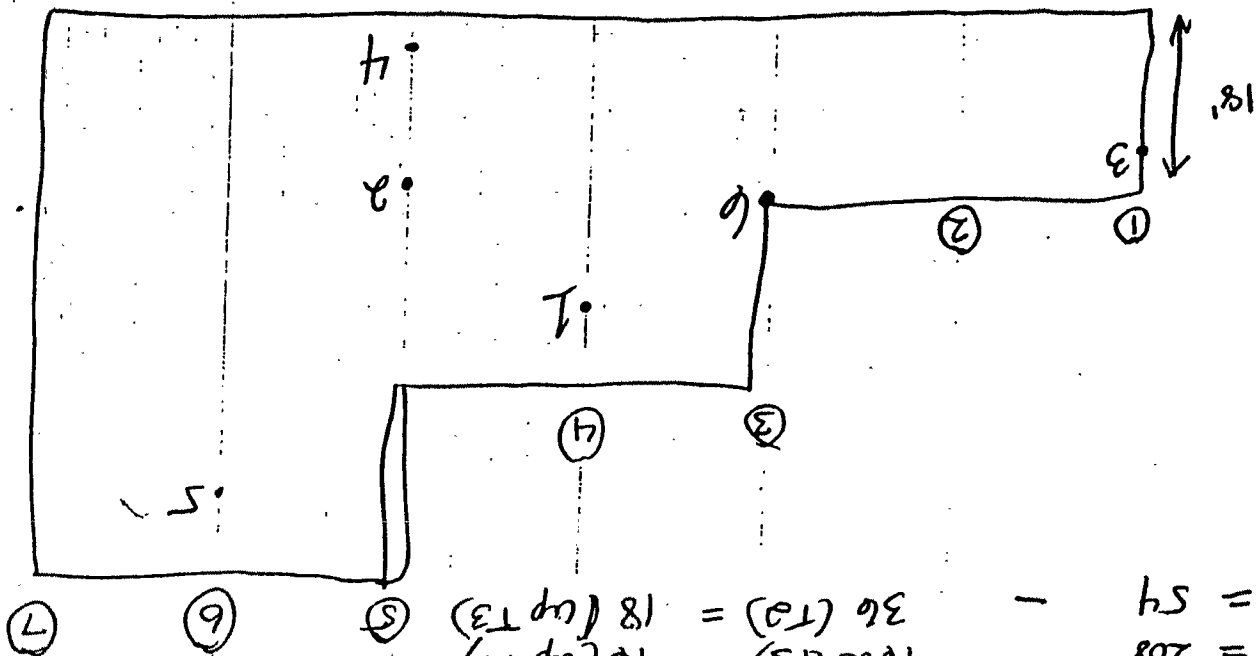
7



# Example B - Irregular Shape Example

Sample Location (ft) Cumulative Distance (ft) Distance to Next Transect (ft)

1 = 100	108 (T4) = 16 (up T5)	-
2 = 124	72 (T3) = 28 (up T4)	-
3 = 13.5	0 = 13.5 (up T1)	-
4 = 219	216 (T6) = 3 (up T5)	-
5 = 208	162 (T5) = 46 (up T6)	-
6 = 54	36 (T2) = 18 (up T3)	-



Transects

Distance

Cumulative Distance

Sample Location

Get from Table or Calculator

Random #

Sample Distance

1	18
2	18
3	36
4	36
5	54
6	54
7	54

18	18
36	72
108	162
216	270

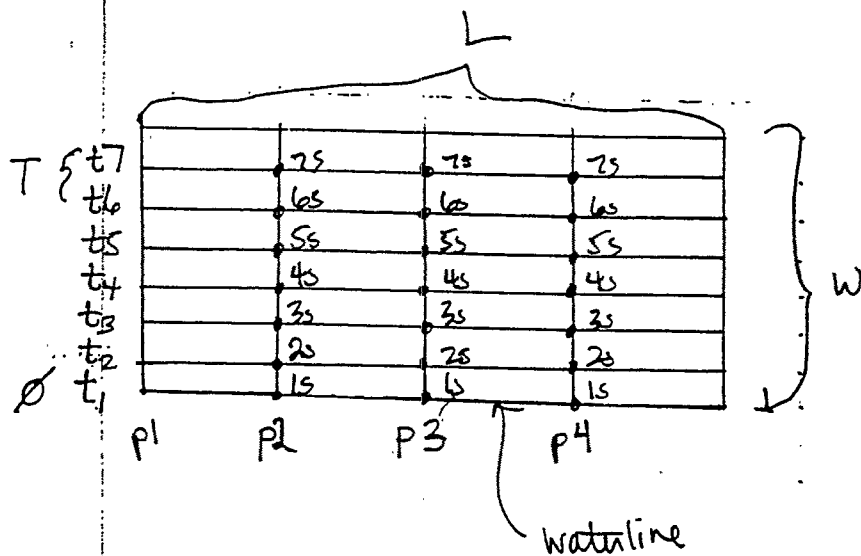
1	18
2	36
3	72
4	108
5	162
6	216
7	270

1	18
2	36
3	72
4	108
5	162
6	216
7	270

18	18
36	72
108	162
216	270

Scale 1 sq = 1.8 ft  
1 in = 18 ft

## Figure 2 - Bank Deposit Profile Sampling Scheme Diagram



1. Measure length ( $L$ ) and width ( $W$ ) of area.

2. Divide width ( $W$ ) by number of samples ( $n$ ) to determine distance between transects ( $T$ ).

3. Divide length ( $L$ ) by 4 to determine distance ( $P$ ) between the perpendicular transects ( $P1-P4$ ).

4. Collect samples where transects intersect ( $s$ ); composite parallel to the river along the  $t$  transects.

## **Tables**

**Common Use Sites Selected for Sampling under FSPA 15**

**Summary of the Number of Samples by Common Use Site**

**Anticipated Data Analyses, Rationale, and Methods**

**Data Quality Objectives**

**Sample Summary Table**

**Sample Handling Requirements**

**Project Schedule**

**Project Contacts**

**Table 1**  
**Common Use Sites Selected for Sampling Under FSPA 15**

CUA Site I.D.	Site Name	USGS Cross Reference (1)	Comments	Selection Criteria					
				Use	Accessibility	Private Beach	Swimming	Fishing	Depositional Material Present
201	River Road 95 @Star Road	SRH-16	Large bar and backwater feature; highest lead conc. detected by USGS	Moderate	Medium			X	X
202	Harvard Road North	Near SRH-2, 18, &19	SRHD Area #1	High	Easy		X	X	X
203	Harvard Road South	Near SRH-2, 18, &19	Harvard Road Access Area, south side of river, transect smpling site	Moderate	Easy		X		X
204	Barker Road North	SRH-21	River upstream of Barker Rd. Bridge; SRHD Area #2	High	Easy	X			X
205	Sullivan Rapids	NA	Downstream of Sullivan Rapids and upstream of Sullivan Play Hole; transect smpling. site	Moderate	Difficult			X	X
206	Plante Ferry Park	Near SRH-30	SHRD Area #6; potential former Indian burial site	High	Easy		X	X	X
207	Myrtle Point	NA	River Left across from the Plante Ferry; SRHD Area #6	High	Easy		X	X	X
208	Boulder Beach	NA	SRHD Area #8	High	Easy		X		X (3)
209	People's Park (Latah Creek)	NA	SHRD Area #9	High	Medium		X		X
210	Riverside Park at W. Fort George Wright	NA	SHRD Area #10	Moderate	Easy				X
211	East of 7 Mile Bridge	NA	Large sand bar visible just upstream from the bridge	High	Medium				X
212	Spokane Lake Park Homeowners Association	NA	SRHD Area #15	Moderate	Easy	X			X
213	Southbank Road Beach	NA	SRHD Area #17	Moderate	Easy	X			X
214	Tum Tum Resort	NA	Grass to the water line but high use resort area	High	Easy	X(2)			
215	Chamokane	NA	Tribe #STILRSS001	High	Easy	X (2)			X
216	Beach E. of Little Falls Dam	NA	Tribe #STILRSS003; Children's day camp conducted here	High	Easy	X (2)			X
217	Wynecoop Landing	NA	Tribe #STILRSS005; Boat Dock Launch Facilities, Last Upstream Launch	High	Medium	X (2)			X
218	Coyote Spit	Near SRG-32	Tribe #STILRSS008	High	Medium	X (2)			X
219	The Docks	Near SRG-35	Tribe #STILRSS010; Play Area, Campground, Dock Facilities	High	Easy	X			X
220	Jackson Cove	NA	Tribe #STILRSS011; Public access near residence	Low	Medium	X			X
221	Porcupine Bay	NA	Extremely high use, good boat access, and campground	High	Easy				X
222	"No Name" cmpgrd.	NA	Immediately adjacent to Maggie Shoups	High	Medium	X (2)			X
223	Horseshoe Point cmpgrd.	Opposite SRG-31	Tribe #STILRSS016; Cobbles in wet beach area	Moderate	Medium	X (2)			
224	Pierre Campground	NA	Tribe #STILRSS018; Culturally sensitive, former burial site	High	Easy	X (2)			X
225	Ft. Spokane Park	Near SRG-25 & 25A	Tribe #STILRSS020; Import sand at developed beach, will sample "Long Beach" area	High	Medium	X (2)			X

**Notes:**

- (1) - As described by USGS or others  
 (2) - Privately owned, but public access allowed  
 (3) - Fine material is present but native fines have been amended by imported sand.

NA - not available  
 SRHD - Spokane Regional Health District

**Table 2**  
**Summary of the Number of Samples by Common Use Sites**

CUA Site I.D.	Site Name	Dry Beach Sample Type (0-12 inch)			Total
		80-Mesh Sieve (a)	Bulk (c)	Grain Size (d)	
201 (b)	River Road 95 @Star Road	7	7	7	21
202 (b)	Harvard Road North	7		7	14
203 (b)	Harvard Road South	7		7	14
204	Barker Road North	7	7		14
205 (b)	Sullivan Rapids	7		7	14
206	Plante Ferry Park	7	7		14
207 (b)	Myrtle Point	7		7	14
208 (b)	Boulder Beach	7		7	14
209	People's Park (Latah Creek)	7			7
210	Riverside Park at W. Fort George Wright	7	7		14
211	East of 7 Mile Bridge	7			7
212	Spokane Lake Park Homeowners Association	7			7
213	Southbank Road Beach	7	7		14
214	Tum Tum Resort	7			7
215	Chamokane	7	7		14
216	Beach E. of Little Falls Dam	7			7
217 (b)	Wynecoop Landing	7		7	14
218	Coyote Spit	7	7		14
219	The Docks	7			7
220	Jackson Cove	7			7
221	Porcupine Bay	7	7		14
222 (b)	"No Name" cmpgrd.	7		7	14
223	Horseshoe Point cmpgrd.	7			7
224	Pierre Campground	7			7
225	Ft. Spokane Park	7	7		14
<b>Sum of Samples =</b>		175	63	56	294
<b>Field Duplicates (10% of samples) =</b>		18	6	6	30
<b>Total Number of Samples =</b>		193	69	62	324

**Notes:**

- (a) - Samples will be sent to laboratory for 80-mesh sieving, followed by total metals analysis (Section 5.2).
- (b) - Collect composite samples following procedures in Section 5.4 (bank-deposit profile sampling) and Figure 2.
- (c) - Bulk samples will be submitted for total metals analysis with no sieving (Section 5.3).
- (d) - Bank deposit profile samples for grain size analysis only (Section 5.4).

**Table 3**  
**Anticipated Data Analyses, Rationale, and Methods**

Matrix	Analyses	Study Rationale	Analytical Method
Water (equipment rinsates)	Total metals	Field QC Samples	CLP Method ILM04.0
Sediment	Total metals (all locations)	Qualitatively assess concentrations of inorganics of concern in CUA beach sediment	CLP Method ILM04.0
	Grain size (8 locations)	Particle size distribution in CUA beach sediment	ASTM D-422(a) (modified)
	Sieve sediment of 80-mesh (all locations, excluding the 9 bulk sample locations)	Perform analysis on particles of the size expected to adhere to skin	ASTM D-422

Notes: (a) ASTM D-422 is modified by adding the 80-mesh and 230-mesh intervals to the standard screen.

**Table 4**  
**Data Quality Objectives**

Analyte/Parameter	Target Detection Limit			Accuracy (d)	Precision (d)	Target Completeness (percent)
	Risk-based (a)	Background (b)	CRDL (c)			
Metals (mg/kg)						
Antimony	3.0	1.1	20 (0.4)	CLP	CLP	90
Arsenic	0.038	40	5 (0.2)	CLP	CLP	90
Cadmium	3.7	0.8	10 (0.06)	CLP	CLP	90
Copper	280	—	40	CLP	CLP	90
Lead	40	43	10	CLP	CLP	90
Mercury	2.2	0.1	0.3	CLP	CLP	90
Zinc	2200	95	10	CLP	CLP	90

Notes: CLP = contract laboratory program CRDL = contract required detection limit

- (a) Risk-based target detection limits for arsenic, cadmium, and zinc are EPA Region 9 PRGs (which correspond to a cancer risk of 1E-06 or a hazard quotient of 1) multiplied by 10 percent. Target detection limit for lead in sediment is based 1/10<sup>th</sup> of EPA's soil guidance value (OSWER 9355.4-12).
- (b) Background concentrations on sediment from Gott, G.B. and J.B. Cathrall, 1980.
- (c) CRDL target detection limits will be used except for antimony, arsenic, and cadmium. The laboratories have been providing the detection limits in brackets next to the CRDL values.
- (d) EPA CLP Statement of Work ILM04.0.

Table 5  
Sample Summary Table

Number of Samples	Number of Duplicates	Location	Analyses	Number of Samples	Container Type
175	18	Dry Beach Sediment	Total metals (80-mesh sieve before chemical analysis)	193	4 oz. wmg (a)
63	6	Dry Beach Sediment	Total metals (bulk)	69	4 oz. wmg
56	6	Dry Beach Sediment	Grain size	62	32 oz. wmg
7	NA	Equipment rinsates	Total metals	7	1 liter HDPE

(a) Sieve to be performed on 1 gallon ziploc bag of sediment. 4 oz glass jar to be submitted to the CLP lab for total metals analysis.

Table 6  
Sample Handling Requirements

Sample Matrix	Method	Parameter of Interest	Sample Container	Number of Samples	Preservation Technique	Holding Time
Sediment	IN-CLP (a)	Total metals: antimony, lead, arsenic, cadmium, copper, mercury, zinc	4 oz wmg	262	Cool to 4°C	6 months 28 days (mercury)
	D-422 (mod)	Grain size	32 oz wmg	62	Cool to 4°C	—
	D-422	Sieve 80-mesh	1 gallon Ziploc™ type baggy	193	Cool to 4°C	—
Equipment Rinsate (Water)	IN-CLP (a)	Total metals: antimony, lead, arsenic, cadmium, copper, mercury, zinc	1 liter HDPE	7	HNO <sub>3</sub> to pH of <2, Cool to 4°C	6 months 28 days (mercury)

(a) – Methods are defined in EPA CLP Statement of Work ILM04.0 for soil and water.

wmg – wide-mouth glass jar

HDPE – high density polyethylene

**Table 7**  
**Project Schedule**

Task	Duration	Estimated End Dates
Field Sampling Plan Submittal	Not applicable	8/13/99
EPA Review and Approval	2 weeks	8/16/99 - 8/27/99
Access/Coordination/Mobilization/ Lab Procurement	Concurrent	8/16/99 - 8/27/99
Field Work	1 week	8/30/99 - 9/06/99
Laboratory Analysis	35 days or 5 weeks	9/06/99
Data Validation/Quality Assurance Review	3 weeks	10/29/99 - 11/19/99

Note:

Data validation will be performed by an independent data validation subcontractor.

**Table 8**  
**Project Contacts**

Key Role	Name	Telephone
EPA Work Assignment Manager (WAM)	Mary Jane Nearman	(206) 553-6642
EPA WAM-Pager Number	Mary Jane Nearman	(206) 955-0580
EPA Human Health Risk Assessment Management Lead	Sean Sheldrake	(206) 553-1220
EPA QA Officer	Bruce Woods	(206) 553-1193
EPA RSCC Contact	Melody Walker	(206) 553-1106
URSG RAC Region 10 Principal Point of Contact	Vivianne Larkin	(206) 674-1871
URSG Project Manager	Michael Rosenfeld	(206) 674-1906
CH2M HILL Project Manager	Dan Winstanley	(425) 453-5005
URSG Data Manager	Mike Surowiec	(206) 674-1967
URSG Analytical Chemistry	Todd Goins	(206) 674-1843
URSG Health and Safety Manager	Sharon Quiring	(206) 674-1974
URSG QA Manager	Libby Goldstein	(206) 674-1844
URSG Field Lead	Kris Hinds	(206) 674-1858 (425) 503-0046 (cell)
CH2M Hill Spokane Office	Kris Hinds	(509) 747-2000



**Attachment A**

**Preliminary Site List and Characteristics**

**PRELIMINARY SAMPLING SITES ALONG THE SPOKANE RIVER**  
Washington State; Coeur D'Alene Basin R/FS

CUA Site I.D.	Selected	Site	Priority	Site Visited	Agency that Selected Site	Site Name	USGS Cross Reference (1)	Comments	Selection Criteria			
									Use	Accessibility	Private Beach	Depositional Material Present
		1		No	Ecology		Near SRH-5	Jeep access to small gravel beach	Low	Difficult		
201	X	2	1	Yes	Ecology	River Road 95 @Star Road	SRH-18	Large bar and backwater feature; highest lead conc. detected by USGS	Moderate	Medium		X
		3	2	No	Ecology		SRH-17	Bar/Island on river left	Low	Difficult		X
202	X	4	1	Yes	Ecology/SRHD	Harvard Road North	Near SRH-2, 18, & 19	SRHD Area #1	High	Easy		X
203	X	5	1	Yes	Ecology	Harvard Road South	Near SRH-2, 18, & 19	Harvard Road Access Area, south side of river, transect smpling site	Moderate	Easy		X
204	X	6	1	Yes	Ecology/SRHD	Barker Road North	SRH-21	River upstream of Barker Rd. Bridge; SRHD Area #2	High	Easy	X	X
		7	2	Yes	Ecology	Barker Road South	NA	Downstream of Barker Road Bridge	Moderate	Medium		X
205	X	8	1	Yes	Ecology	Sullivan Rapids	NA	Downstream of Sullivan Rapids and upstream of Sullivan Play Hole; transect smpling. site	Moderate	Difficult		X
206	X	9	1	Yes	Ecology/SRHD	Plante Ferry Park	near SRH-30	SHRD Area #8; potential former Indian burial site	High	Easy		X
207	X	10	1	Yes	Ecology/SRHD	Myrtle Point	NA	River Left across from the Plante Ferry; SRHD Area #6	High	Easy		X
		11	2	Yes	SRHD	N Flora Road South	NA	SHRD Area #3	High	Medium		
		12	3	Yes	SRHD	Sullivan Park	NA	SRHD Area #4; Park is out of the flood plain of the river; very large cobbles, steep trail to beach	High	Difficult		
		13	3	No	SRHD	Old Zoo	NA	SHRD Area #5	Low	Easy		
		14	3	Yes	SRHD	Island Park	NA	SHRD Area #7	High	Medium		
208	X	15	1	Yes	SRHD	Boulder Beach	NA	SHRD Area #8	High	Easy		X
209	X	16	1	Yes	SRHD	People's Park (Latah Creek)	NA	SHRD Area #9	High	Medium		X
210	X	17	1	Yes	SRHD	Riverside Park at W. Fort George Wright	NA	SHRD Area #10	Moderate	Easy		X
		18	2	Yes	SRHD	Downriver Golf Course	NA	SHRD Area #11; boat & bike access only	Moderate	Difficult		X
		19	2	Yes	SRHD	Riverside State Park/Cmpgmd	NA	SHRD Area #12; almost no sand, all large cobbles	High	Easy		
		20	2	Yes	SRHD	Piese Flats	NA	SHRD Area #13 (Bank Restoration Area No Swimming)	Low	Easy		X
211	X	21	1	Yes	Ecology/SRHD	East of 7 Mile Bridge	NA	Large sand bar visible just upstream from the bridge	High	Medium		X
		22	2	Yes	SRHD	Deep Creek	NA	SHRD #14	Low	Medium		X
		23	2	Yes	Spokane Tribe	Two Rivers Marina	Near SRG-25 & 25A	Tribe #STILRSS021, small beach at high water	High	Easy	X (2)	X
225	X	24	1	Yes	Park Service	Ft. Spokane Park	Near SRG-25 & 25A	Tribe #STILRSS020; Import sand at developed beach, will sample "Long Beach" area	High	Medium	X (2)	X
		25	2	Yes	Spokane Tribe	Rodeo Ranch	NA		Moderate	Medium	X (2)	X
		26	2	Yes	Spokane Tribe	Un-named Boating Beach	Near SRG27	Tribe #STILRSS019; Road access does not extend to beach	Moderate	Difficult	X (2)	X
224	X	27	1	Yes	Spokane Tribe	Pierre Campground	NA	Tribe #STILRSS018; Culturally sensitive, former burial site	High	Easy	X (2)	X
		28	1	Yes	Spokane Tribe	Marina McCoy	Near SRG-30	Tribe #STILRSS017; Marina has fill material along beach	High	Easy	X (2)	X
223	X	29	1	Yes	Spokane Tribe	Horseshoe Point cmpgmd.	Opposite SRG-31	Tribe #STILRSS016; Cobbles in wet beach area	Moderate	Medium	X (2)	X
		30	2	Yes	Spokane Tribe	Maggie Shoups cmpgmd.	NA		High	Medium	X (2)	X
222	X	31	1	Yes	Spokane Tribe	"No Name" cmpgmd.	NA	Immediately adjacent to Maggie Shoups	High	Medium	X (2)	X
221	X	32	1	Yes	Park Service	Porcupine Bay	NA	Extremely high use, good boat access, and campground	High	Easy		X
		33	2	Yes	Spokane Tribe	Wynecoop	Near SRG-36	Tribe #STILRSS012	Low	Medium	X	X
220	X	34	1	Yes	Spokane Tribe	Jackson Cove	NA	Tribe #STILRSS011; Public access near residence	Low	Medium	X	X
219	X	35	1	Yes	Spokane Tribe	The Docks	Near SRG-35	Tribe #STILRSS010; Play Area, Campground, Dock Facilities	High	Easy	X	X
218	X	36	1	Yes	Spokane Tribe	Coyote Spit	Near SRG-32	Tribe #STILRSS008	High	Medium	X (2)	X
		37	2	Yes	Spokane Tribe	Jimmy Le Brett Flats	NA	Low use at high water, steep banks	Low	Difficult	X	X
		38	2	Yes	Spokane Tribe	Shell Midden	NA	Tribe #STILRSS006; Residential site, low public use	Low	Medium	X	X
217	X	39	1	Yes	Spokane Tribe	Wynecoop Landing	NA	Tribe #STILRSS005; Boat Dock Launch Facilities, Last Upstream Launch	High	Medium	X (2)	X
		40	1	Yes	Spokane Tribe	Lincoln County Corn.	NA	Tribe #STILRSS004; Private land, marsh area w/boat dock	Low	Easy	X	X
		41	2	No	Spokane Tribe	Little Chamokane	NA	Tribe #STILRSS002	Low	Medium	X (2)	X
215	X	42	1	No	Spokane Tribe	Chamokane	NA	Tribe #STILRSS001	High	Easy	X (2)	X
216	X	43	1	No	Spokane Tribe	Beach E. of Little Falls Dam	NA	Tribe #STILRSS003; Children's day camp conducted here	High	Easy	X (2)	X
212	X	44	1	No	SRHD	Spokane Lake Park Homeowners Association	NA	SRHD Area #15	Moderate	Easy	X	X
213	X	45	1	No	SRHD	Southbank Road Beach	NA	SRHD Area #17	Moderate	Easy	X	X
214	X	46	1	Yes	SRHD	Tum Tum Resort	NA	Grass to the water line but high use resort area	High	Easy	X(2)	

NOTES (1) United States Geologic Survey sample location.  
(2) Privately owned, but public access allowed

SRHD = Spokane Regional Health District  
NA = Not available

5-Aug-99

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**Attachment B**

**Sample Location Maps**

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# UPPER SPOKANE RIVER (1ST SITE)

Parcel: 55024.0701

Owner: WASH STATE DEPT PARKS & REC

CoOwner:

Owner Address

715D CLEANWATER LN OLYMPIA WA 98504

Site Address

VACANT LAND . SPO

## Legal Description

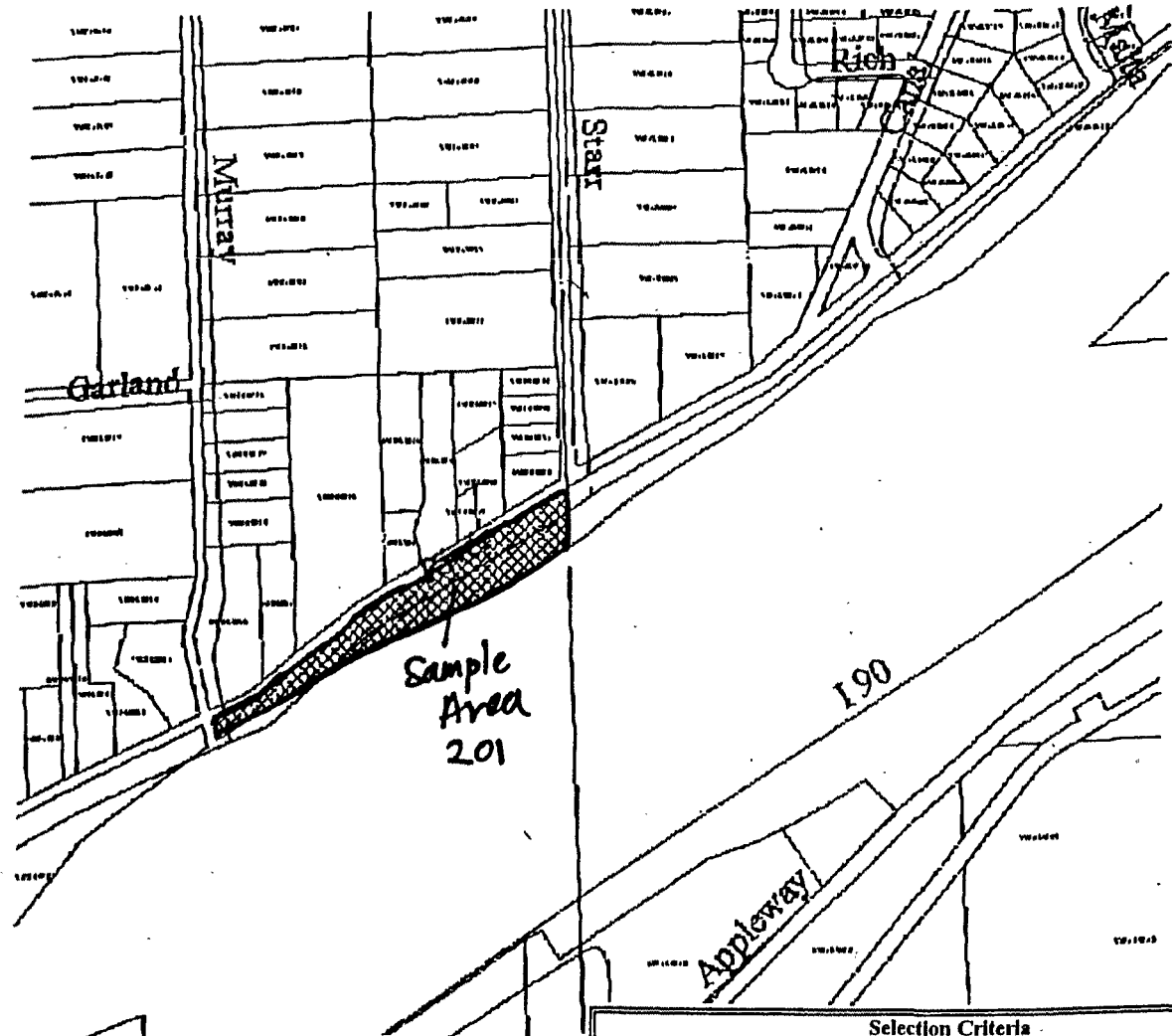
PLAT #3 EAST FARMS IRRIGATED TRACTS; ALL OF BLOCKS  
124 & 127

AND PTN BLOCK 128 LYG SELY OF LN DAF; BEG ON W LN  
GOVT LOT 8

1024FT SLY OF NW COR SD LT 6; TH N48DEG11MINE 312.6FT;  
TH

N57DEG191/2MINE 239.8FT TO E LN OF SD BLOCK 128  
COMMON WITH

W LN OF BLOCK 127 OF SD PLAT.



				Selection Criteria					
CUA Site I.D.	Site Name	USGS Cross Reference (1)	Comments	Use	Accessibility	Private Beach	Swimming	Fishing	Depositional Material Present
201	River Road 95 @Star Road	SRH-16	Large bar and backwater feature; highest lead conc. detected by USGS	Moderate	Medium			X	X

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.

Parcel: 55102.9008

Owner: WASH STATE DEPT PARKS & REC

CoOwner:

Owner Address

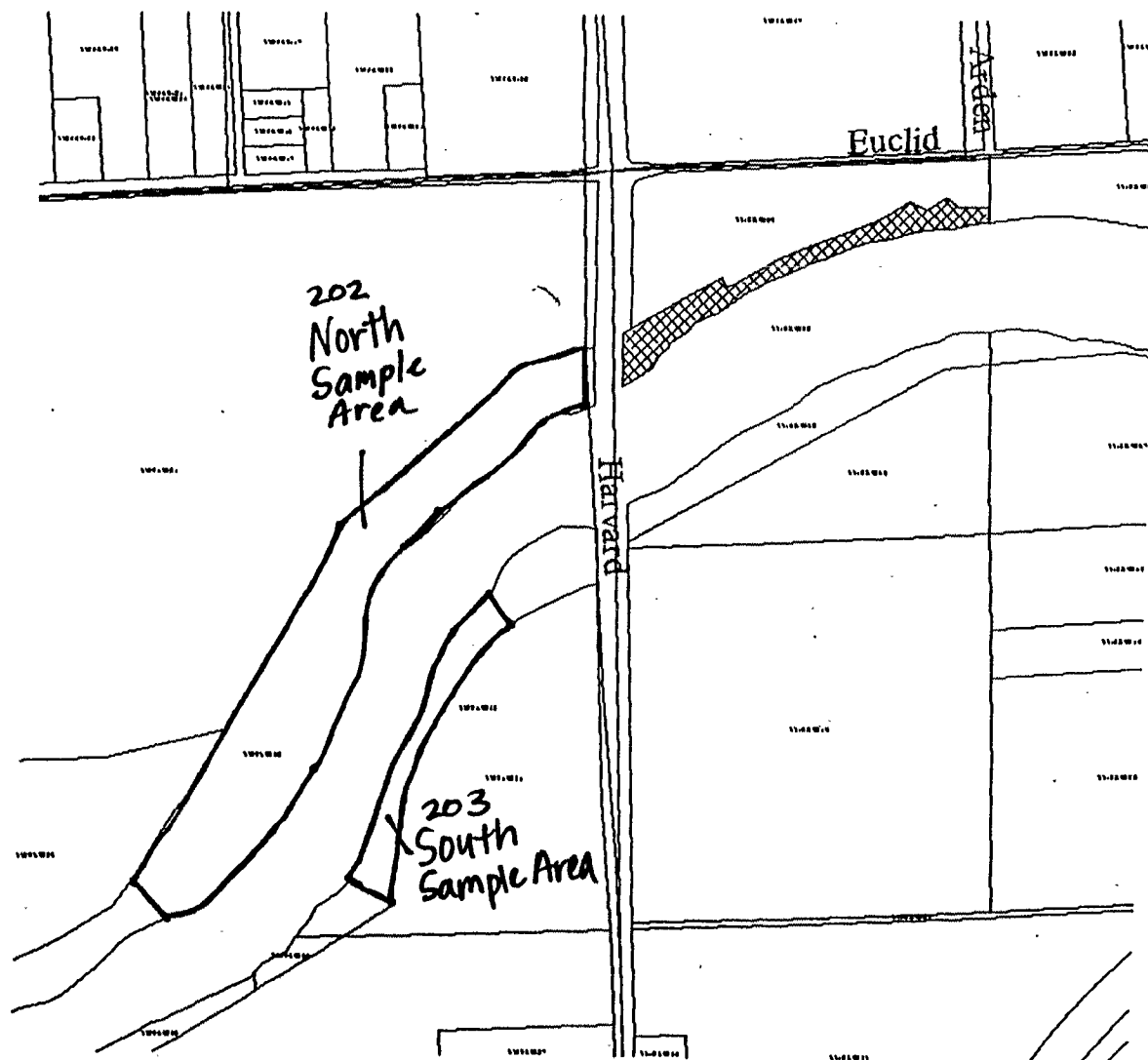
7150 CLEANWATER LN OLYMPIA WA 98504

Site Address

VACANT LAND . SPO

Legal Description

10 25 45 PTN OF L4 OF NW 1/4 DESC IN DOC 53446A



202	Harvard Road North	Near SRH-2, 18, &19	SRHD Area #1	High	Easy			X
203	Harvard Road South	Near SRH-2, 18, &19	Harvard Road Access Area, south side of river, transect smpling site	Moderate	Easy		X	X

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.

Parcel: 55083.9063

Owner: WASH STATE DEPT PARKS & REC

CoOwner:

Owner Address

7150 CLEANWATER LN OLYMPIA WA 98504-2650

Site Address

VACANT LAND . SPO

Legal Description

08-25-45

BEG AT W1/4 COR SD SEC; TH S ALG W LN SD SEC 450FT; TH N

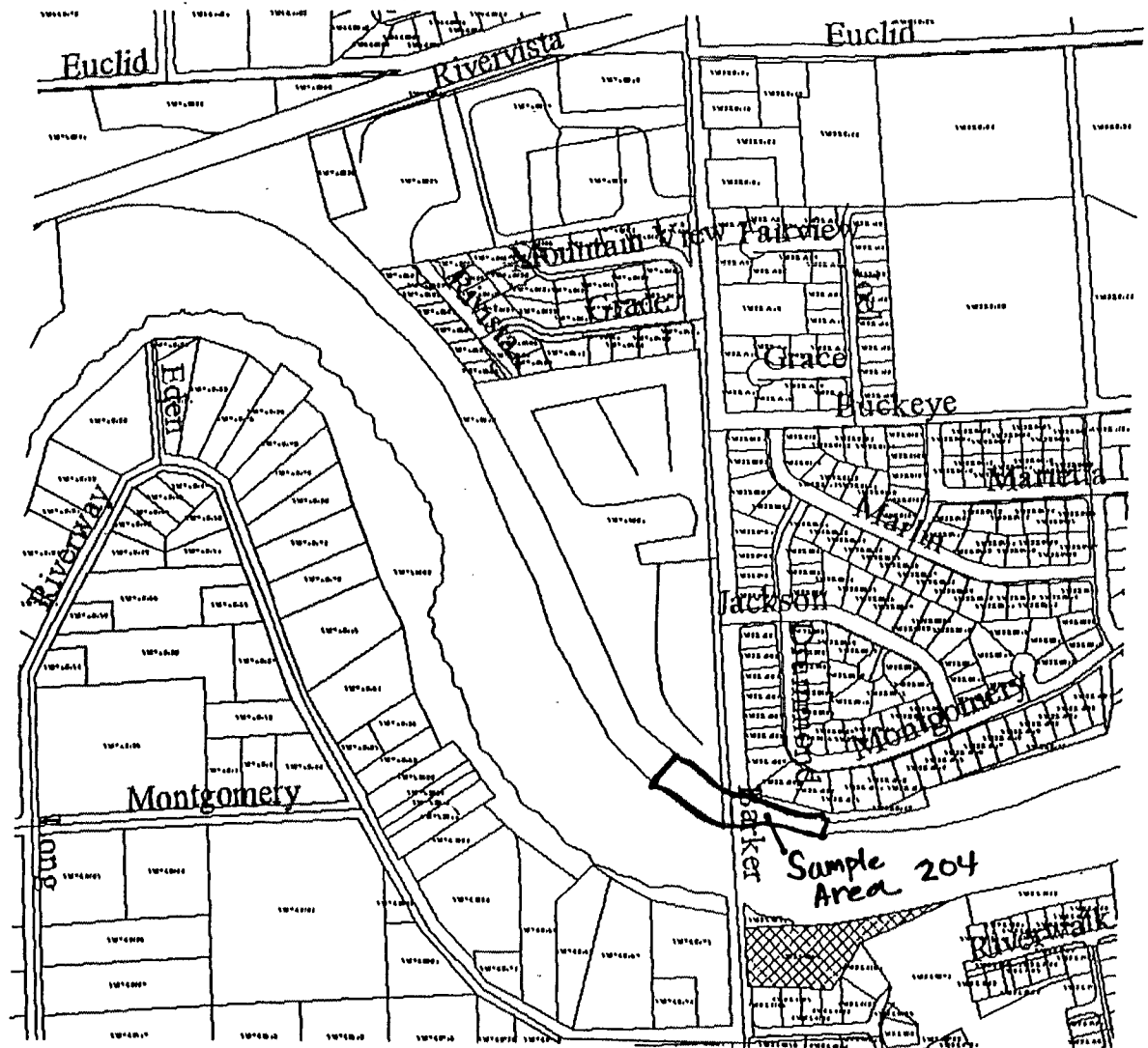
89DEG 24MIN 57SDS E, 30FT; TO POB; TH N 89DEG 24MIN 57SDS E,

300FT; TH N 80DEG 40MIN 57SDS E, 434.35FT; TH S 66DEG 24MIN

57SDS W 349.24FT; TH S 34DEG 24MIN 57SDS W, 190FT; TH N

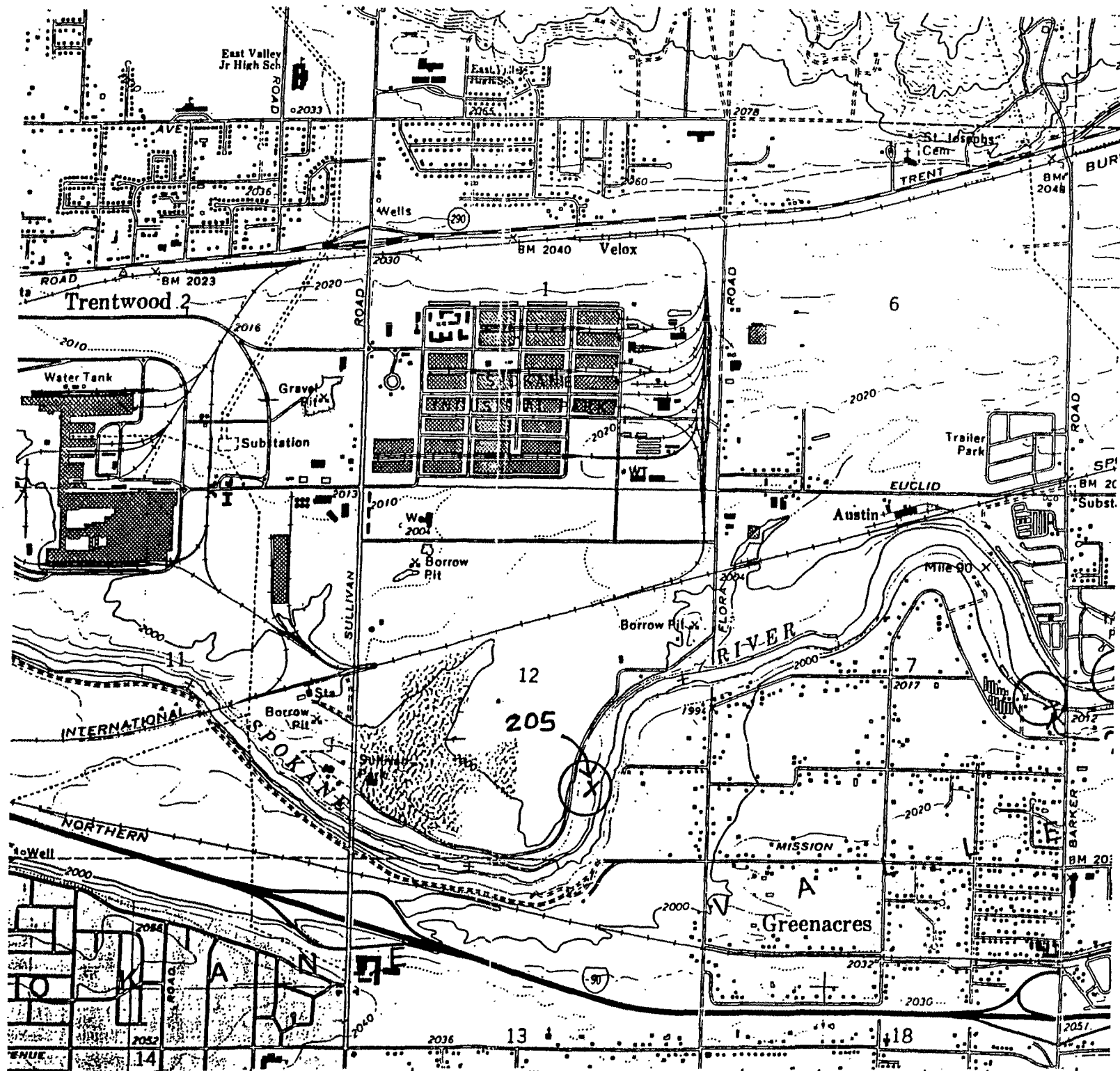
85DEG 35MIN 03SDS W, 300FT; TH N ALG E R/W LN BARKER RD 200

FT TO POB



204	Barker Road North	SRH-21	River upstream of Barker Rd. Bridge; SRHD Area #2	High	Easy				X
-----	-------------------	--------	---	------	------	--	--	--	---

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.



Parcel: 45041.9003

Owner: WASH STATE DEPT PARKS & REC

CoOwner:

Owner Address

7150 CLEANWATER LN OLYMPIA WA 98504

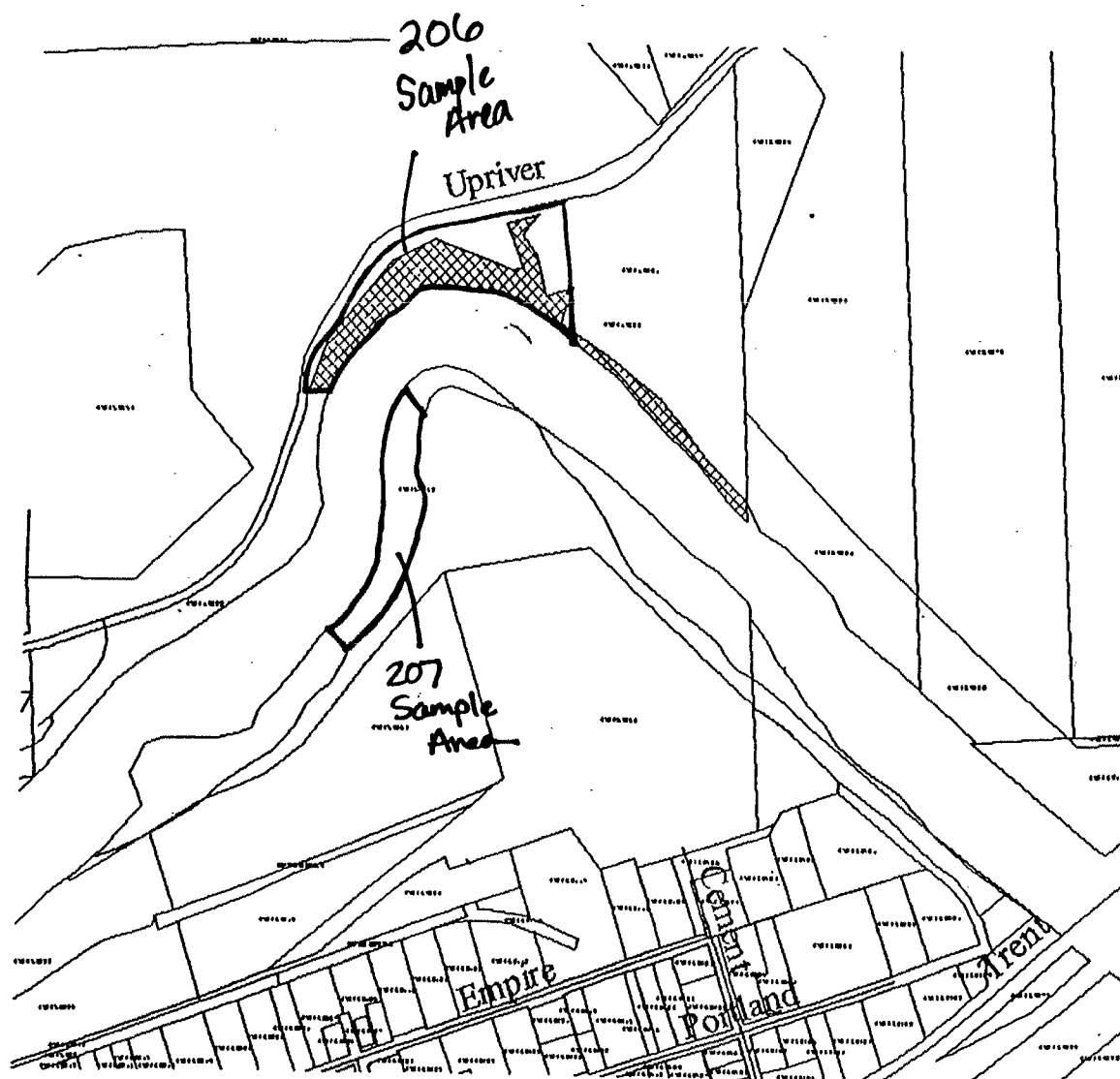
Site Address

VACANT LAND . SPO

Legal Description

04 25 44 PTN OF L1&2 OF NE 1/4 SLY OF TR DESC IN DOC  
352666

A



206	Plante Ferry Park	Near SRH-30	SHRD Area #6; potential former Indian burial site	High	Easy				X
207	Myrtle Point	NA	River Left across from the Plante Ferry; SRHD Area #6	High	Easy				X

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.



0 1000 2000  
Feet

208  
Sample  
Area

E Upriver Dr

EB

062544 \*

122543

208

Boulder Beach

NA

SRHD Area #8

High

Easy

X



## Sites with High Public Usage



SRHD

July 12, 1999

Parcel: 25144.0001

Owner: SPOKANE, CITY OF

CoOwner:

Owner Address

808 W SPOKANE FALLS BLV SPOKANE WA 99201-3333

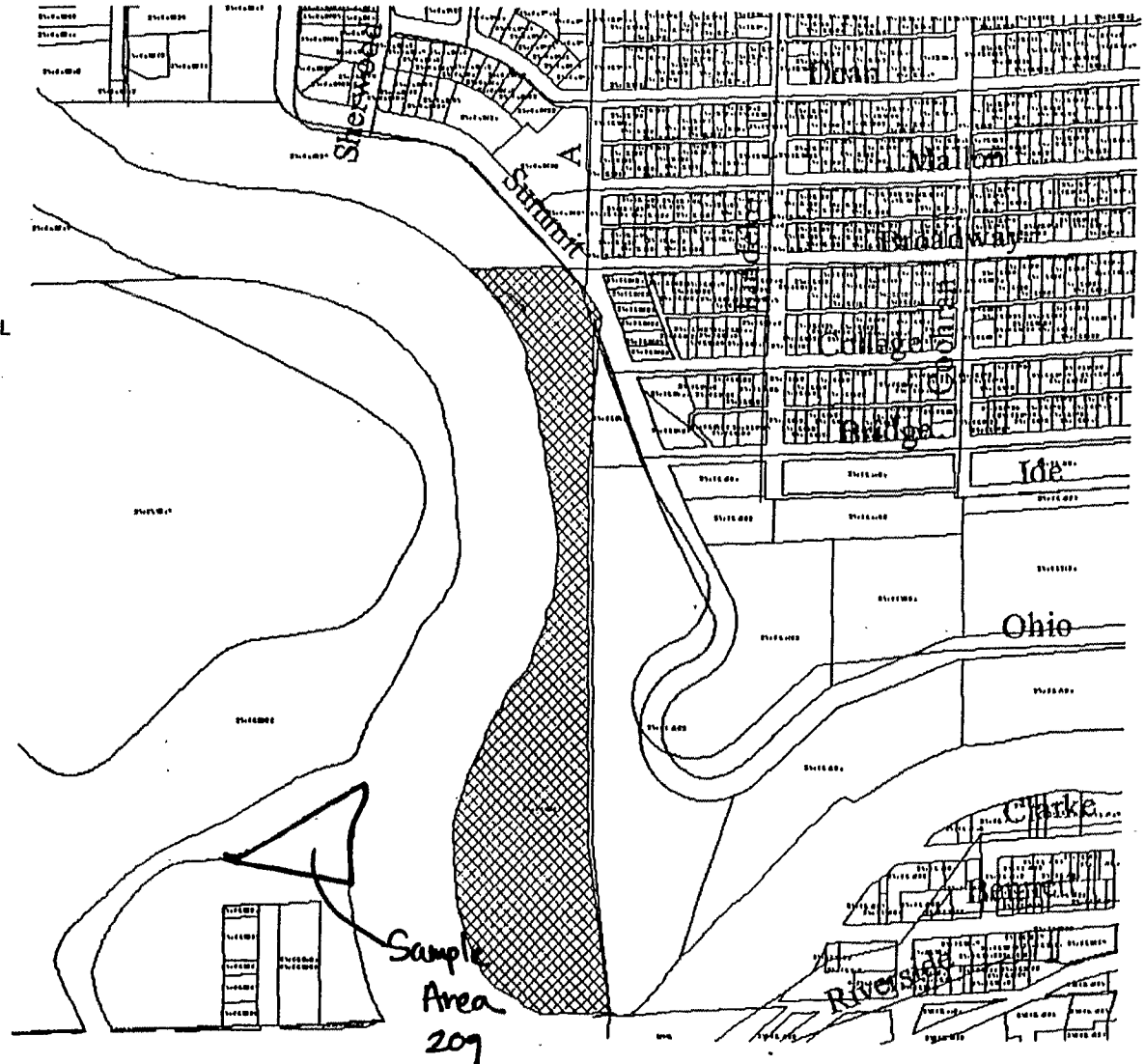
Site Address

ADDRESS UNKNOWN . SPO

Legal Description

142542PT OF L6 IN SE1/4 S OF GN RW;PT OF L10 IN SE1/4;A LL

EXC RW



209	People's Park (Latah Creek)	NA	SHRD Area #9	High	Medium				X
-----	-----------------------------	----	--------------	------	--------	--	--	--	---

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.

Parcel: 25122.0001

Owner: SPOKANE, CITY OF

CoOwner:

Owner Address

808 W SPOKANE FALLS BLV SPOKANE WA 99201-3333

Site Address

ADDRESS UNKNOWN . SPO

**Legal Description**

122542PT OF SE1/4 OF NW1/4;BEG AT SWCOR TH E570FT TH NLY ALG

LN PAR WITH &50FT SWLY MEAS AT R/A SWLY LN OF B11 ABERN

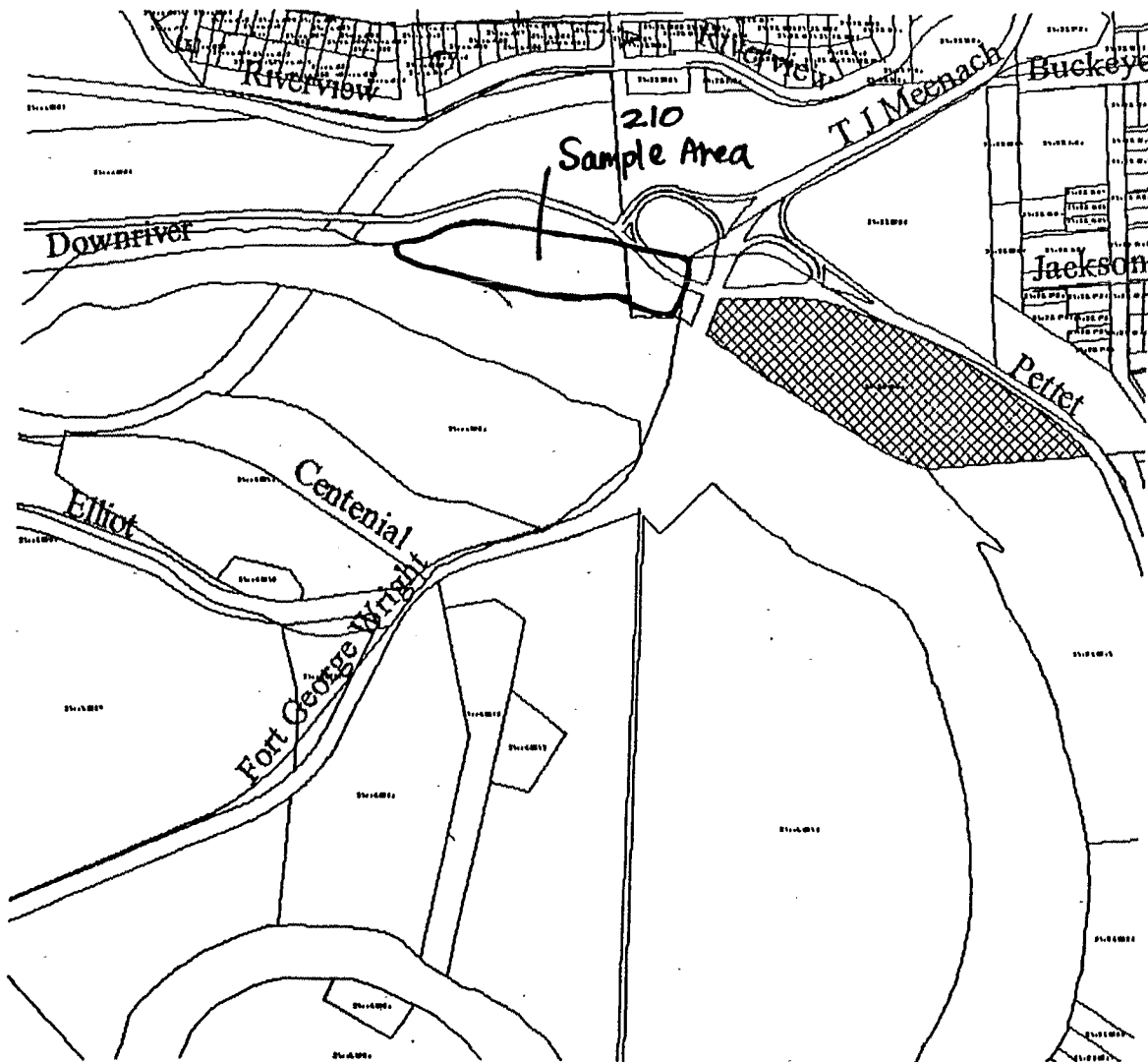
ETHY ADD338FT M/L TO SECOR OF L9B7SD ADD TH NWLY 190.8FT M/L

T O WL OF L7 B7 7.5FT N OF SWCOR T H NWLY69.2FT M/L TO SL

OF L2 B7 4.8FT W OF SECOR TH NWLY 121.3FT M/L TO WL OF L1 B7

81FT S OF NWC OR TH NWLY 122FT M/L TO WL OF S,E1/4 OF NW1/4

605.4FT N OF SWCOR TH S605.4FT TO POB



210	Riverside Park at W. Fort George Wright	NA	SHRD Area #10	Moderate	Easy			X
-----	---	----	---------------	----------	------	--	--	---

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.

# 7 Mile BRIDGE SITE

Parcel: 28213.2502

Owner: WASH STATE DEPT PARKS & REC

CoOwner:

Owner Address

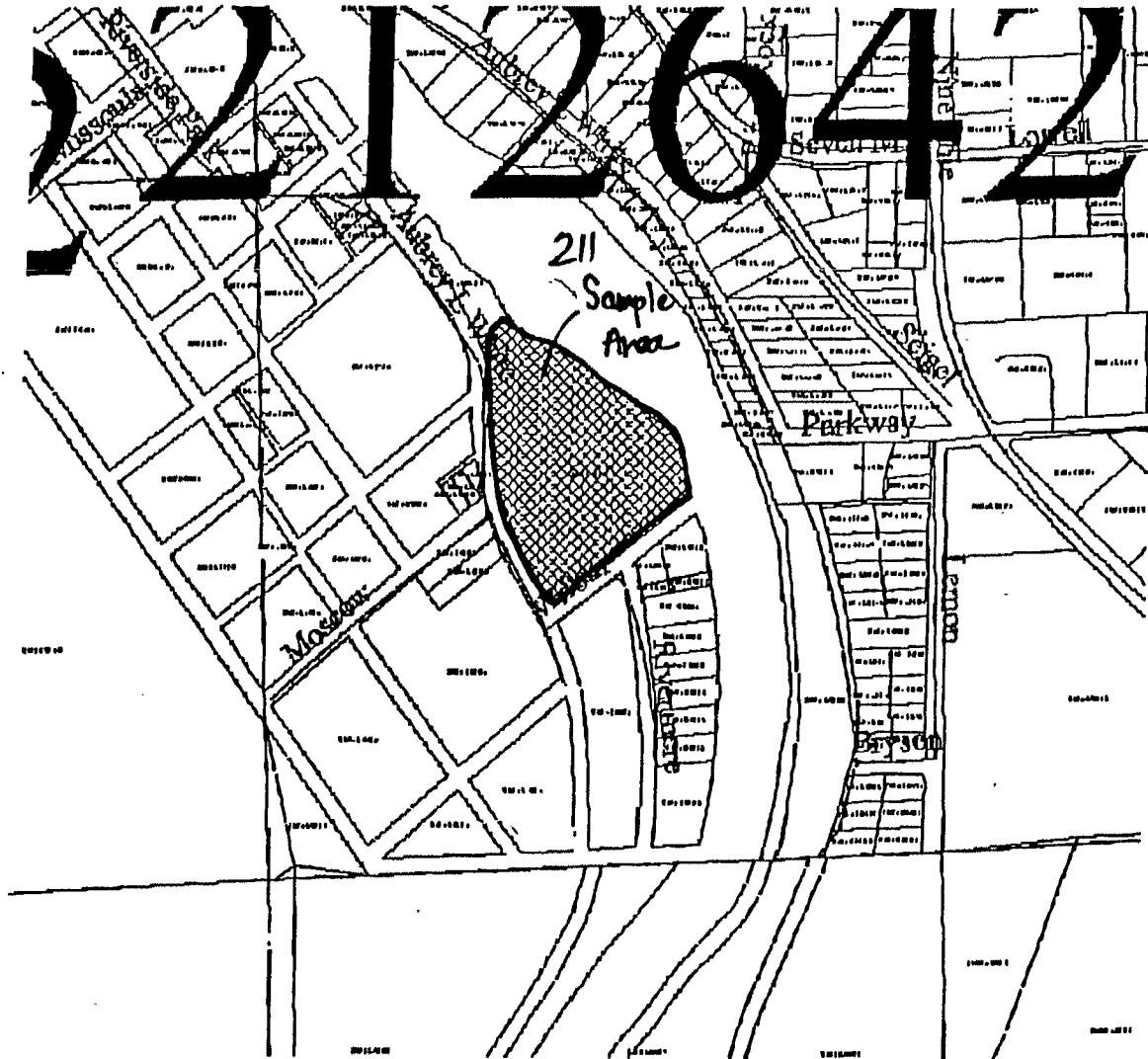
7160 CLEANWATER LN OLYMPIA WA 98504

Site Address

VACANT LAND - SPO

Legal Description

RIVERMERE 1ST B27-28-30



211	East of 7 Mile Bridge	NA	Large sand bar visible just upstream from the bridge	High	Medium					X
-----	-----------------------	----	--	------	--------	--	--	--	--	---

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.

Parcel: 26052.9007

Owner: WASH STATE DEPT PARKS & REC

CoOwner:

Owner Address

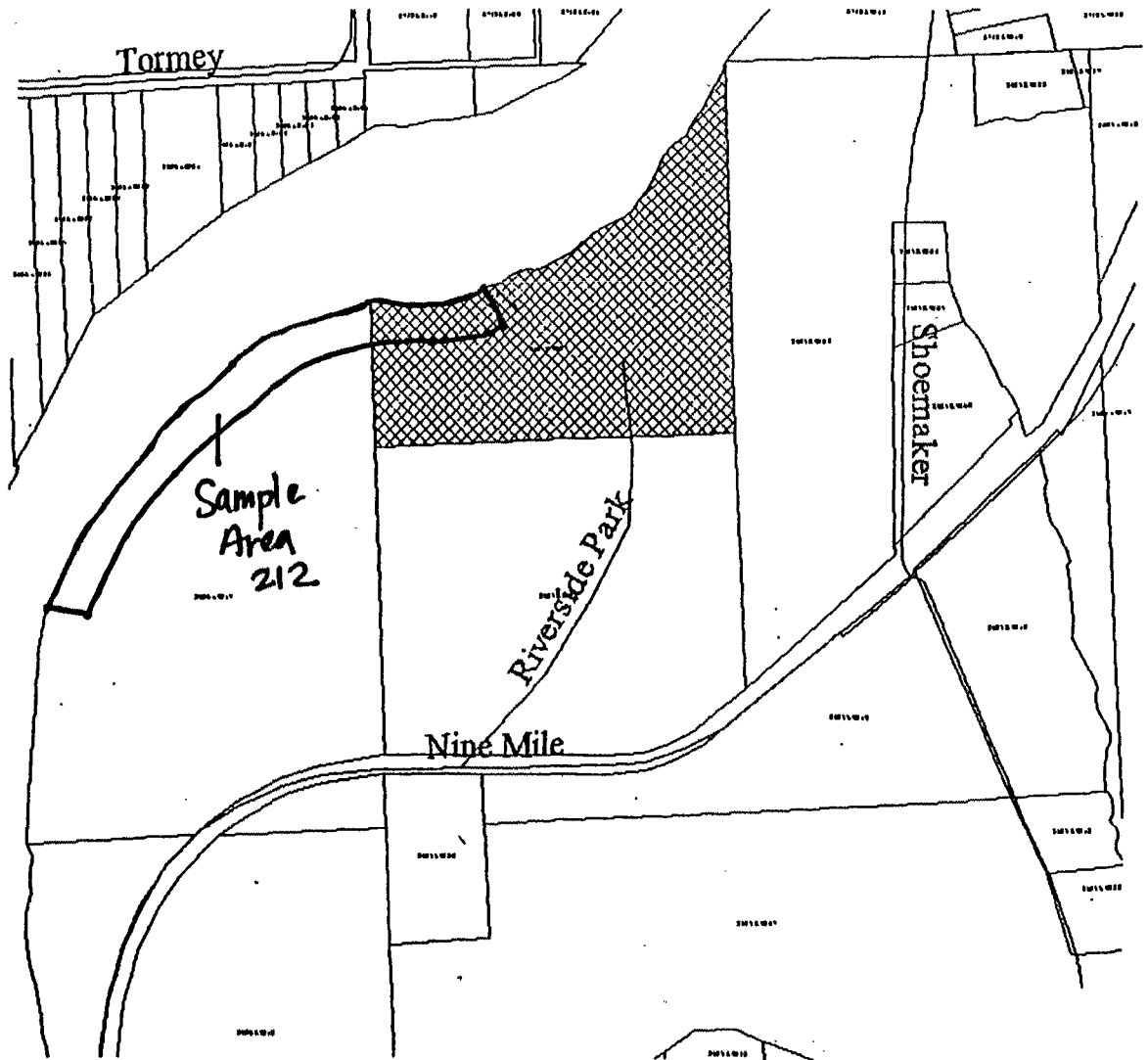
7150 CLEANWATER LN OLYMPIA WA 98504

Site Address

VACANT LAND . SPO

Legal Description

05 26 42 LOT 4 IN NW1/4



212

Spokane Lake Park Homeowners  
Association

NA

SRHD Area #15

Moderate

Easy

X

X

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.

Parcel: 17175.9005

Owner: WASHINGTON WATER POWER

CoOwner:

Owner Address

1411 E MISSION AVE SPOKANE WA 99202-2617

Site Address

VACANT LAND . SPO

Legal Description

17-27-41 PTN OF NE1/4 OF SW1/4 & SW1/4 OF SE1/4 & PTN OF GOV

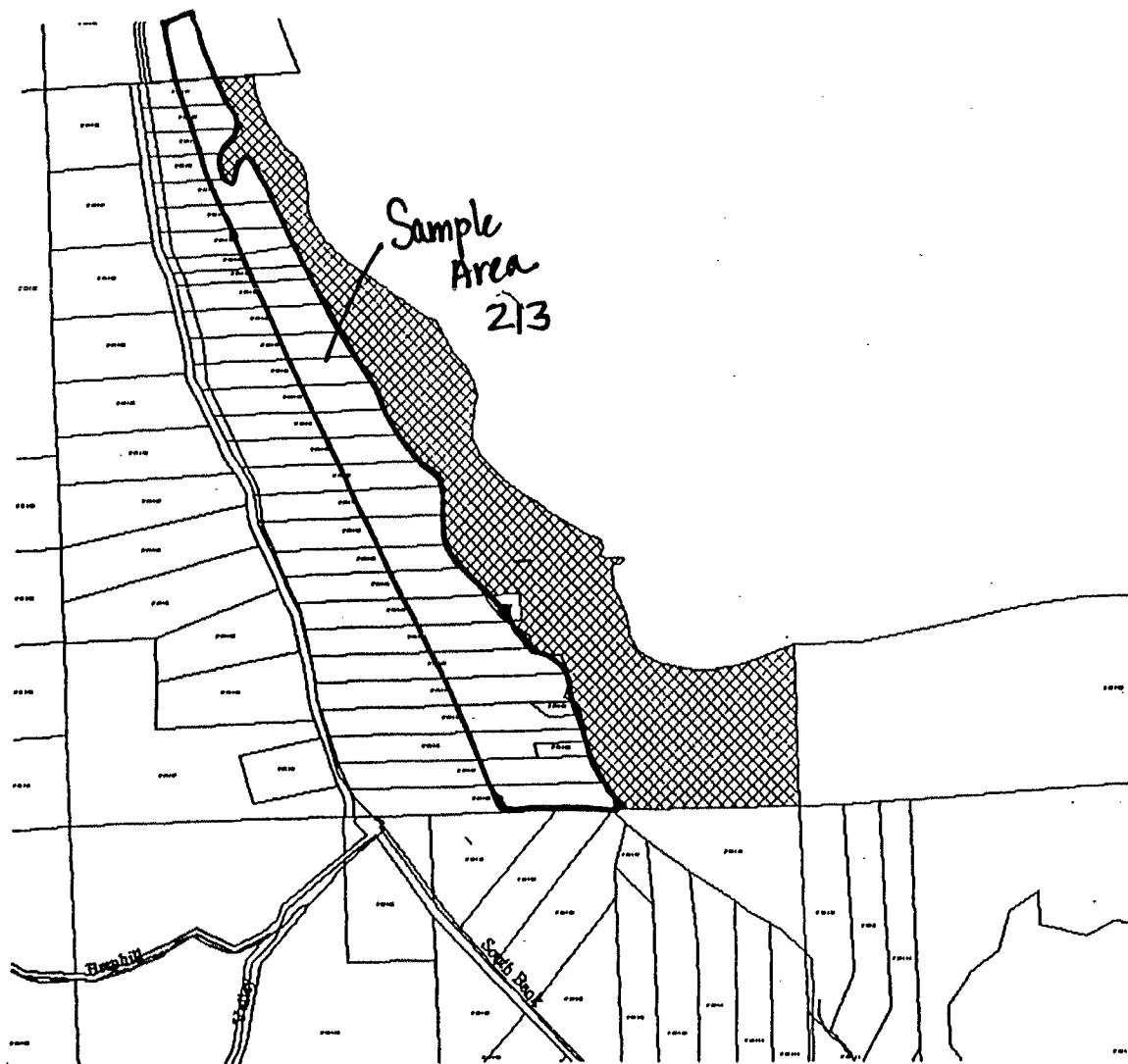
LTS 2-3-6&7 BELOW 1533FT CONTOUR EXC PTN OF GOV LT 6 DAF;

BEG AT NE COR OF LT 21 LAKE FOREST ADD TH E ON N LN OF SD LT

21 EXTD 250FT TH S190FT TH W TO SE COR OF LT 21 TH N57DEG 2

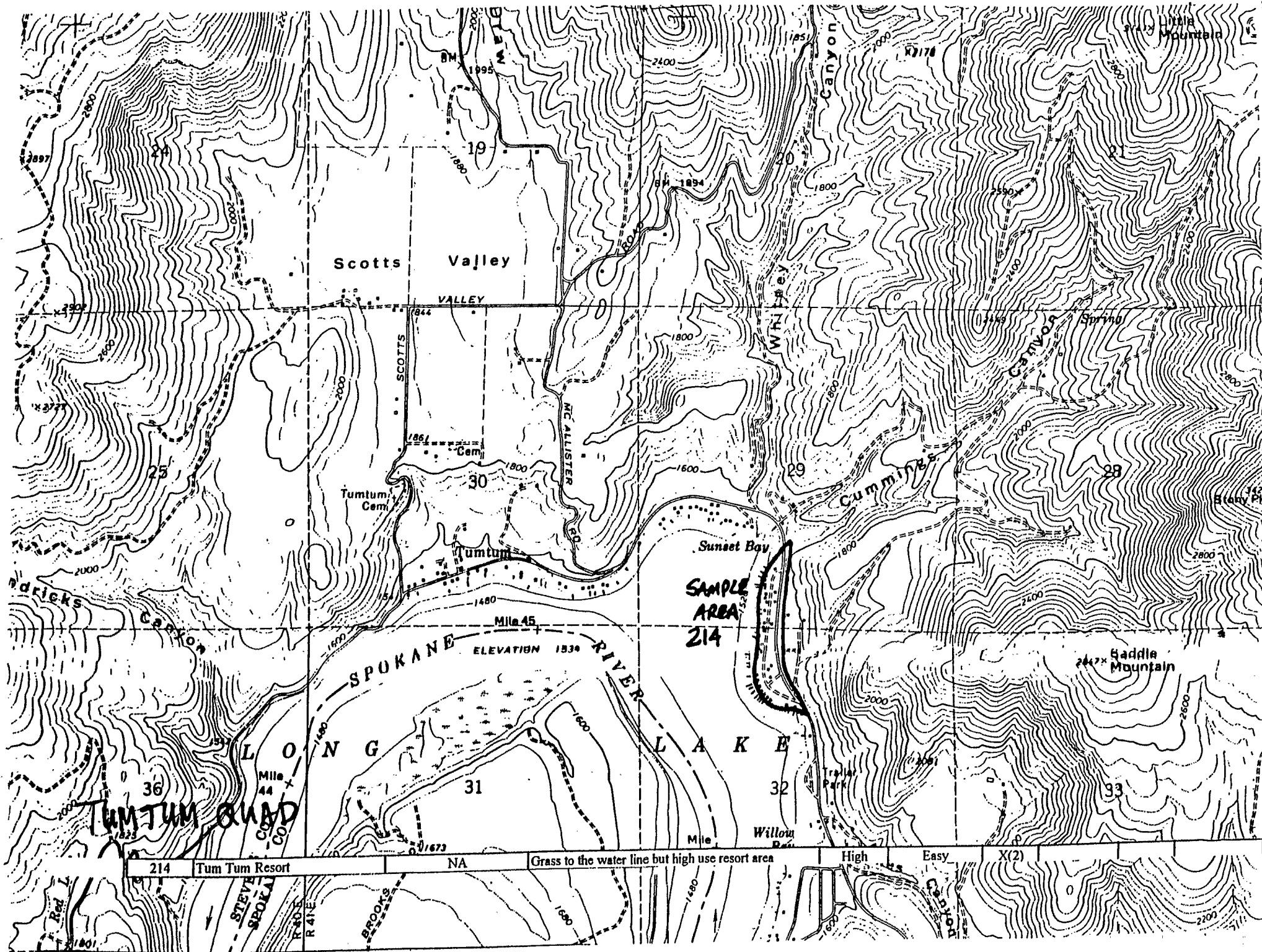
4.5MIN W62.4FT TH N34DEG 10MIN W189FT TO POB TCO

32-104-107&492

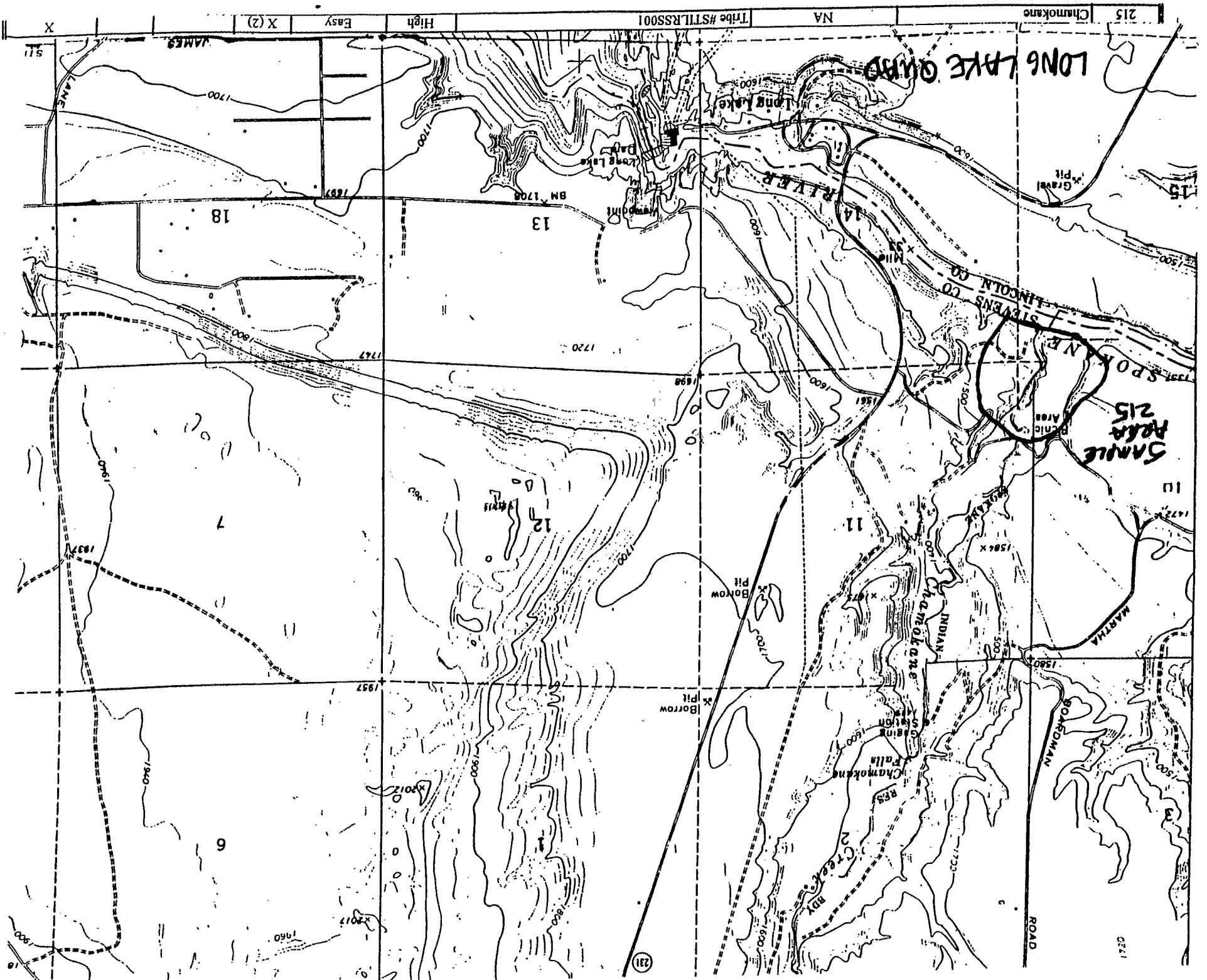


213	Southbank Road Beach	NA	SRHD Area #17	Moderate	Easy	X			X
-----	----------------------	----	---------------	----------	------	---	--	--	---

Notice: This is not a legal document. Data depicted on this map is general & subject to constant revision. It is intended for reference use only. Legal documents should be obtained from the appropriate agency.



214	Tum Tum Resort	NA	Grass to the water line but high use resort area	High	Easy	X(2)			
-----	----------------	----	--	------	------	------	--	--	--



215 Chamokane

NA

Tribe #STILRSS001

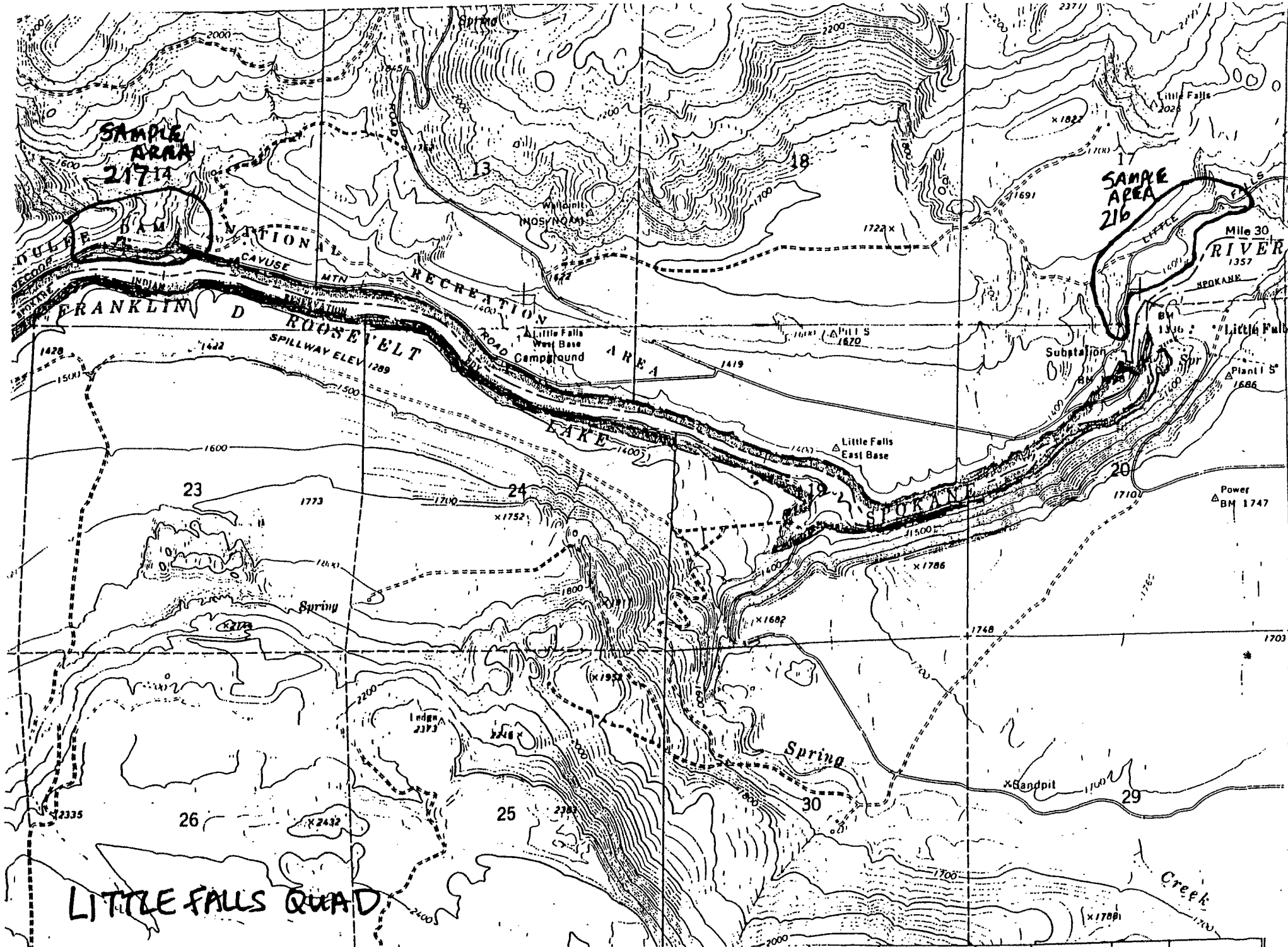
High

Easy

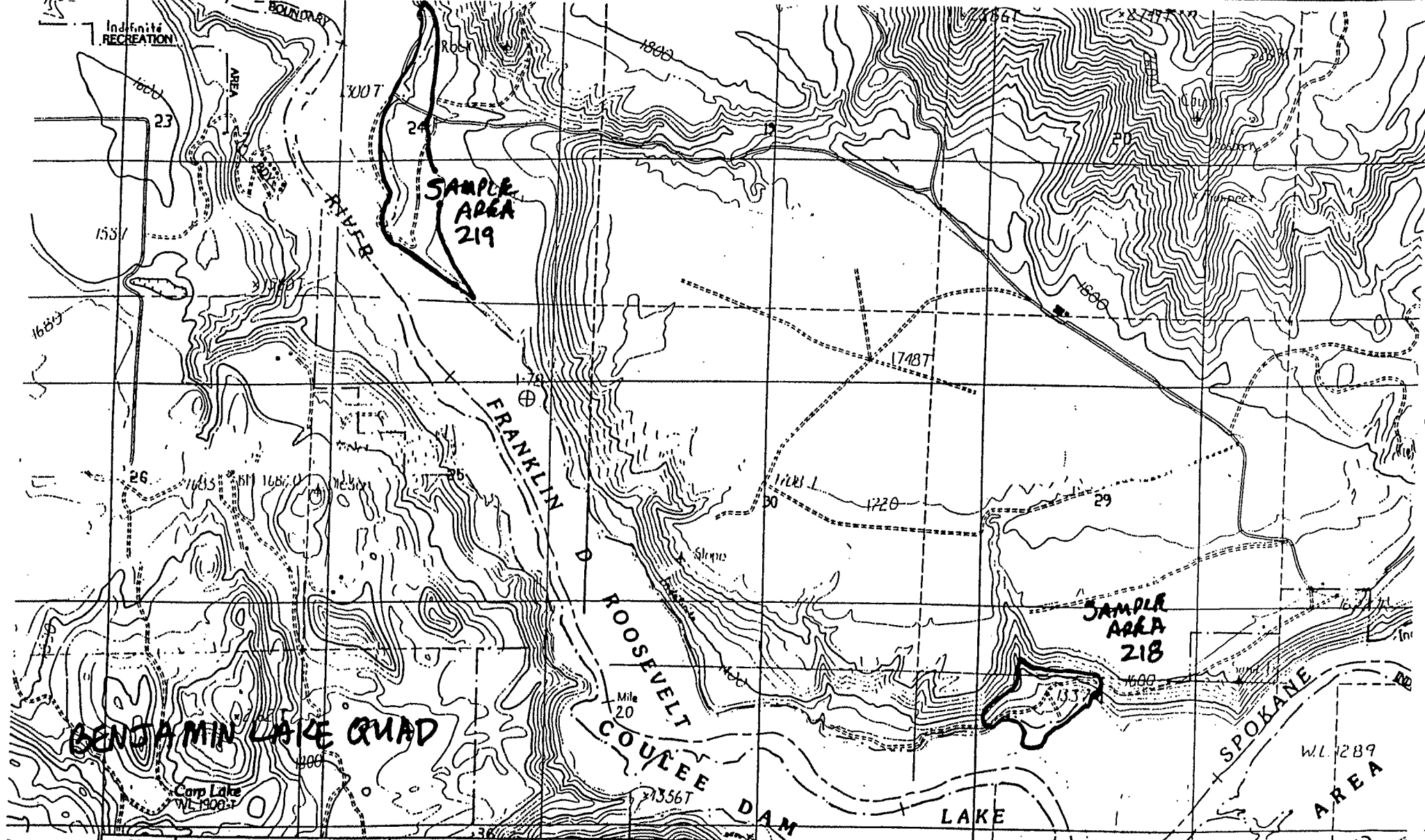
X (2)

X

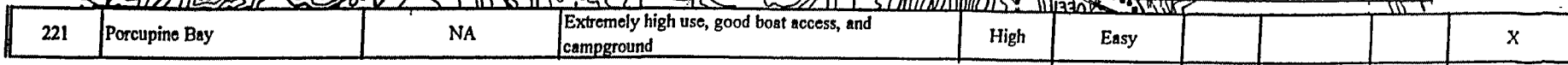




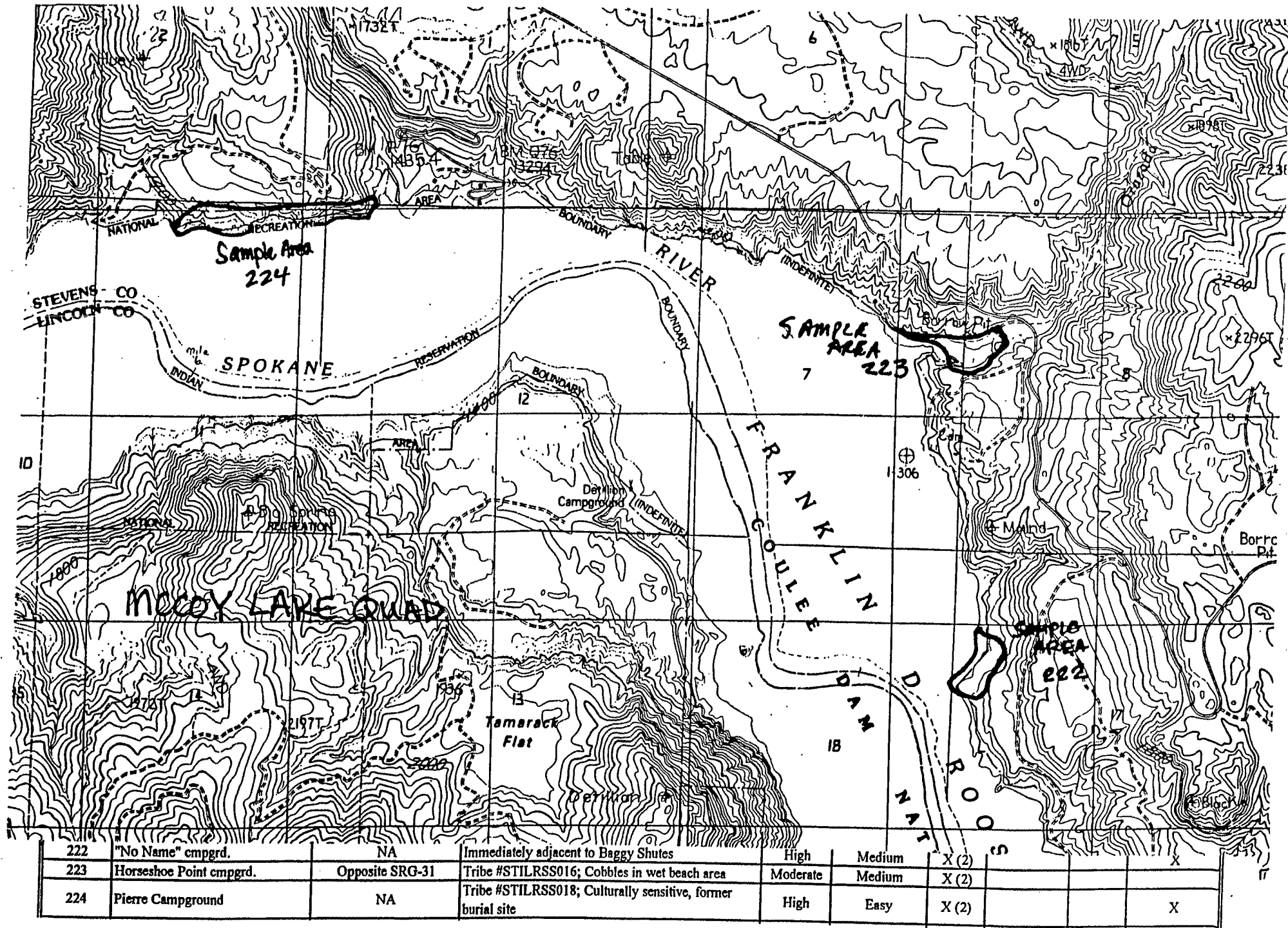
216	Beach E. of Little Falls Dam	NA	Tribe #STILRSS003; Children's day camp conducted here	High	Easy	X (2)			X
217	Boat Dock Launch Facilities	NA	Tribe #STILRSS005; Boat Dock Launch Facilities	High	Medium	X (2)			X

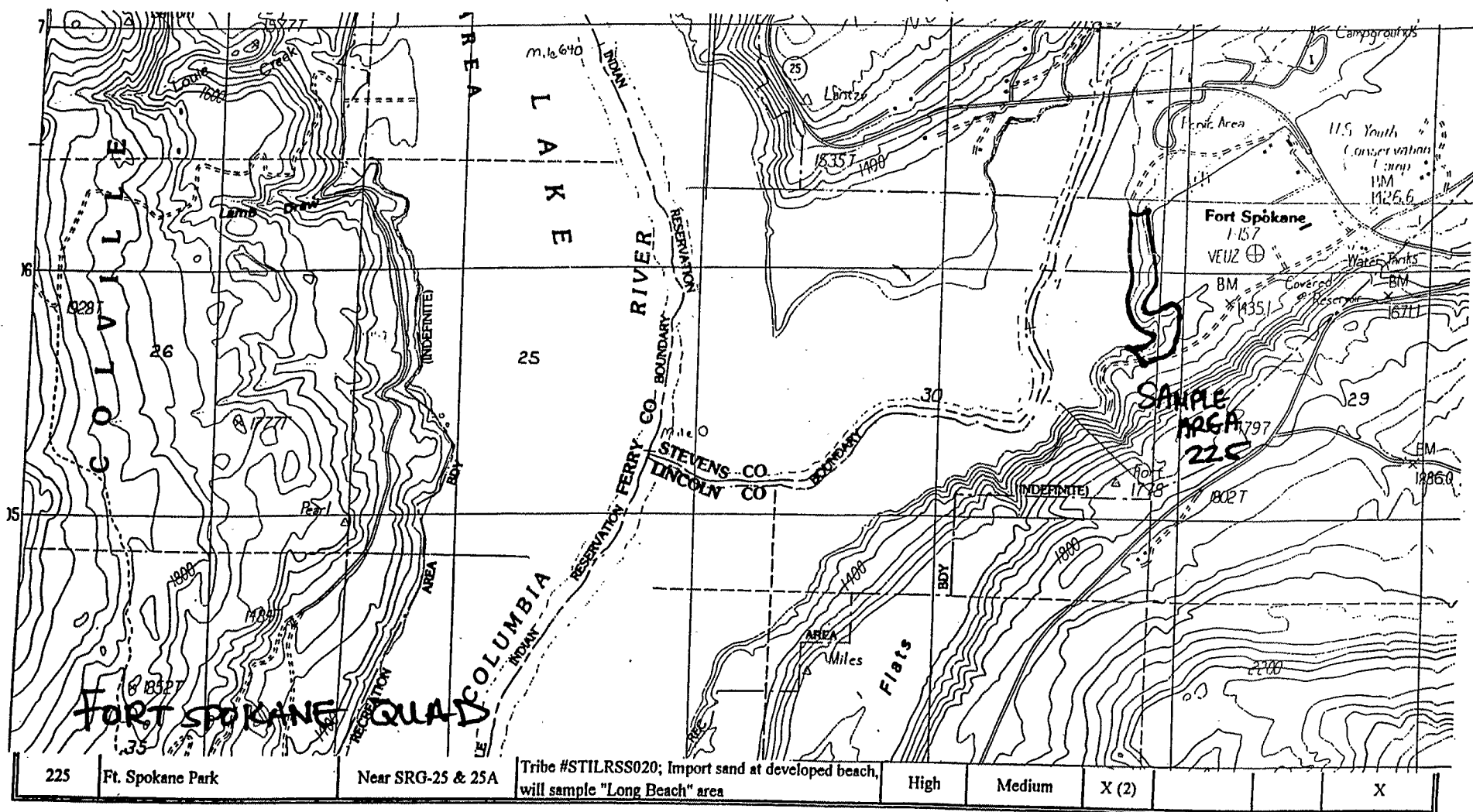


218.	Coyote Spit	Near SRG-32	Tribe #STILRSS008	High	Medium	X (2)		X
219	The Docks	Near SRG-35	Tribe #STILRSS010; Play Area, Campground, Dock Facilities	High	Easy	X		X



221	Porcupine Bay	NA	Extremely high use, good boat access, and campground	High	Easy				X
-----	---------------	----	--	------	------	--	--	--	---





Notes:

- (1) - As described by USGS or others
- (2) - Privately owned, but public access allowed

NA - not available  
 SRHD - Spokane Regional Health District



Attachment C

Sample Location Photographs

**PHOTOS WILL BE PROVIDED AT A LATER DATE**

Attachment D

MAX of N



## Sample Allocation

The Max of N method to determine sample size is based on randomized collection of samples within defined areas of relatively homogeneous contamination. The number of samples within any homogeneous area is independent of the size of the area and has been based upon a nonparametric (distribution-free) statistical method which calculates the size of a sample (N) required to estimate a prespecified tolerance interval of the sampled population with a prespecified level of confidence (Practical Nonparametric Statistics, W.J. Conover. John Wiley, 1980).

Nonparametric specification of sample size makes no assumptions about the underlying distribution of the chemical or compound. It does require specification of both a desired level of confidence and a desired upper bound on the quantile (of the sampled population) being estimated. The level of confidence reflects the probability that the maximum concentration from a sample of a given size will exceed the prespecified upper quantile and is preselected. The "Q"-th quantile of the population being sampled is the pre-selected proportion of the population being estimated (where Q ranges between 0 and 1). For example, half of the population is greater and half of the distribution is less than the .5 quantile, the population median value. The upper and lower quartiles of the distribution, the .75 and .25 quantiles, respectively, are the concentration levels at which 25% and 75% of the population are greater.

A prespecified confidence level of 95% and prespecified .5 quantile means that the maximum concentration from the sample of size "N" will not be less than the median (due to chance alone) more than 5 times out of 100 or will be greater than the median 95 times out of 100. "N" increases as either the preselected quantile (upper tolerance limit) or preselected level of confidence increases. The effect of raising the quantile of interest dominates the increase in required sample size. For example, to be 90% certain that the maximum concentration from a sample exceeds the median of the population being sampled requires a sample size of 4; to be 95% certain requires a sample size of 5—a comparatively negligible increase in sample size. To be 90% confident that the maximum sample concentration is greater than the .95 quantile requires a sample size of 45; to be 95% confident requires an N of 59.

The following tabulates sample sizes to meet a range of prespecified coverages and a range of prespecified confidence levels.

Estimated Quantile	85% Confidence	90% Confidence	95% Confidence	99% Confidence
50th [Median]	3	4	5	7
75th [Upper Quartile]	7	9	11	16
85th	12	15	19	28
90th	19	22	29	44
95th	37	45	59	90

The tabulated values are a useful subset of the following plot which exhibits the relative influence of increased coverage and increased confidence on sample size:

Differential coverage of areas of concern over a site is best allocated on the basis of the conceptual model of site contamination. In general, a sample size of 5 will provide a high-confidence best estimate of the potential for contamination in a given area. Greater coverage may be specified for areas within the site about which information is limited or for areas which, based upon waste disposal practices, are expected to evidence greater variability in either the number or type of contaminants or the range of contaminant levels. In sampling reference areas, comparatively high coverage is advantageous, particularly if comparison to reference is the first step in identification of contaminants of concern.

## Sample Locations

The only strong assumption implicit to the Max of N methodology is that sampling is randomized. Randomization (which is not synonymous with arbitrary) means that any location carries an equal probability of being sampled and that sampled locations are randomly assigned. It is an insurance policy against potential bias in results due to unknown processes. While an essential component to a sampling strategy, complete randomization is not necessarily the most efficient way to assign sample locations. A useful constraint to randomization in environmental situations where spatial coverage is of interest is to systematically sample from a randomized start point. This means that the all points in the area to be characterized carry equal probability of being sampled but that the entire area is uniformly sampled. Examples include gridding an area with randomized start-point and grid orientation. Application of the strategy in an area which is linear would consist of equispaced samples collected along a transect, with the first sample collected at a randomly selected start point.

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## Attachment E

### Sample Handling Procedures and Examples of Field Forms and COC Paperwork

## 5.0 SAMPLE DESIGNATION, RECORDING AND MANAGEMENT

This section addresses activities that require collection, recording, and management of environmental and quality control samples. All samples will be identified, labeled, logged onto a chain-of-custody report, and recorded in a sample tracking log as part of the procedure to ensure the integrity of the resulting data. The record of the physical sample (location and time of sampling) will be joined with the analytical results through accurate accounting of the sample custody. Sample custody applies to both field and laboratory operations. The chain of custody of the physical sample and its corresponding documentation will be maintained throughout the handling of the sample.

### 5.1 SITE AND LOCATION DESIGNATION

Sites will be identified uniquely within this study so that no ambiguity will exist in the data collected. In addition, a uniform methodology will be used in designating site identifiers to aid in the organization of the data collection and processing. Similarly, location identifiers will be unique within a site.

### 5.2 SAMPLE DESIGNATION

Samples will be identified uniquely so that no ambiguity will exist in the data generated by field measurement or laboratory analysis of the sample. This is achieved by using a series of data collection forms that describe the location of the sample collection event, the analyses to be performed, and the chain of custody for the sample. Various attributes and information are collected for each type of data.

Table 5-1 presents the primary types of data and data elements relating to sample designation. The source of the information and an example of each type of information are shown for each data element. The items listed in the example column are described in subsequent sections as standard codes or abbreviations, as appropriate. Codes and abbreviations are included on each field data collection form.

The key information used to uniquely designate a sample is the sample number. This number is a nonrepeating, sequential, inventory control number that has no meaning other than to uniquely

identify a sample. However, the sample number is directly related to other geographic and environmental information that fully describes the sample. In addition, the sample number is the single designation to which laboratory sample analysis results are related. Thus, the sample number is the controlling identifier that joins individual chemical concentrations to a geographic/environmental location. To assure the uniqueness of individual sample identification numbers, these numbers are provided to the field crews on preprinted labels in batches for the samples submitted to the Regional Analytical Program (RAP) laboratory. For the samples to be submitted to the Contract Laboratory Program (CLP), these numbers are provided by the EPA Regional Sample Coordination Center (RSCC). Section 5.6 provides more details about sample numbering and laboratory assignments.

### 5.3 DATA COLLECTION FORMS

The data collection process is conducted through the use of field forms. These forms are organized so as to facilitate the collection of data in the field and to provide a format for uniform and complete data collection. The forms are partitioned so that information of a certain type is recorded on a form designed for that type of information. Examples of each of the forms are included as Figures 5-1 through 5-9. The types and descriptions of these forms are as follows:

- Monitoring/Sampling Location Summary (Figure 5-1)—This is used to record information about the geographic location at which a sample is collected and includes:
  - Facility/region identifier
  - Site identifier
  - Location identifier
  - Location type
  - Survey coordinates
- Monitoring/Sampling Location Information (Figure 5-2)—This is used in addition to, or in some cases, in lieu of the Monitoring/Sampling Location Summary. This form provides all the pertinent location and type information about a single sample location and includes an area for a sample location sketch. The form includes:
  - Site identifier
  - Location identifier
  - Datum description

- Location description
- Location diagram
- Sample Collection Information (Figure 5-3)—This is used to record the sample event and properties that describe the sample and includes:
  - Sample number
  - Sample type
  - Matrix type of sample collected
  - Depth interval of sample collection
  - Sample date
- Sample Label (Figures 5-4 and 5-5)—Separate labels must be used for the CLP and RAP samples. Labels include:
  - Sample number
  - Laboratory name
  - Date of collection
  - Method of analysis
- Chain of Custody (Figures 5-6 and 5-7)—Separate chain-of-custody forms must be used for the CLP and RAP laboratories. Chain-of-custody forms are used to record the analytical methods that will be used to analyze the samples as specified in the field sampling plan and include:
  - Sample number
  - Sample type
  - Matrix type
  - Sample date
  - Analytical method
  - Analytical laboratory
  - Preservative method
- Laboratory Analysis Data Sheet (Figure 5-8)—This is used to record the results of sample analysis and includes:
  - Laboratory name
  - Sample delivery group number



- Sample number
  - Analytical method
  - Analysis type
  - Compound/analyte name
  - Concentration
  - Units of measure
  - Data qualifiers
  - Data validation qualifiers
- Field Measurement Data Form (Figure 5-9)

#### 5.4 DATA CODES AND ABBREVIATIONS

Several types of data are recorded as codes or abbreviations to reduce the amount of time required to record information in the field and laboratory and to control the consistency of the data. Standard codes and abbreviations are designed to be used throughout all stages of the project. These abbreviations apply to characteristics and units of measure that are universal identifiers across sites. Codes and abbreviations are grouped into categories and each code is assigned a specific definition. These categories are:

- Matrix type
- Location type
- Gradient relationship
- Sampling method
- Sample type
- Laboratory code (company or agency)
- Analytical method
- Analysis type
- Units of measure
- Data qualifiers (organic and inorganic analyses)
- Data validation qualifiers (organic and inorganic analyses)

Abbreviations and codes are included on each field data collection form.

## 5.5 QUALITY CONTROL SAMPLES

Quality control (QC) samples will be collected for the purpose of assessing and documenting data quality and to identify discrepancies in the measurement process that need correction. Quality control samples include field blanks, trip blanks, equipment rinsates, field duplicates, matrix spike/matrix spike duplicates, and standard reference samples, as specified. Additional description of the quantity and intended use of these samples is provided in the generic SAP (URSG 1997a). Required quantities of QC samples will be provided on a site-specific basis.

## 5.6 SAMPLE HANDLING AND MANAGEMENT

All samples will be packed and shipped to laboratories for chemical analysis. Immediately after a sample is collected in the field, a completed sample label will be attached to the sample container. A chain-of-custody form will be prepared at the time samples are collected to identify the analytical methods to be applied to specific samples. Samples will be tracked beginning at the sampling location, through shipment to the laboratory, and through sample analysis. Data from the analysis of the sample will be tracked upon receipt from the laboratory and throughout data analysis and data reporting based on the unique sample number. This ensures both sample chain of custody and data integrity from laboratory analysis.

### 5.6.1 CLP Sample Handling Requirements

All of the soil/sediment samples will be submitted to a RAP laboratory for sieving followed by submittal to a CLP laboratory for chemical analysis. The sample numbering system for all soil/sediment samples will follow the EPA CLP requirements. URSG sample numbers will not be used for these samples. The soil/sediment sample handling protocol will include the following:

- Collect the soil/sediment sample in a one quart Ziploc bag. Label the bag with the EPA-assigned CLP sample numbers and EPA regional tracking number (RTN). Add samplers initials and date and time of collection on the label and custody seal the baggie.
- Complete a URSG chain of custody for sieving of the soil sample (#80 mesh) at the RAP laboratory for method ASTM D-422.
- Complete an Inorganic Traffic Report (CLP chain of custody) for the samples and request total metals analysis. Do not fill out blocks 4 or 5, designating the

shipment to the CLP laboratory. Additionally, write the following text in the block identifying the sample used for a spike and/or duplicate "CLP laboratory to designate." Ensure that all field crew members sign the ITR as either sampler signature (block 2) or as additional samplers.

- Include an empty 4-ounce glass jar labeled with the CLP and RTN sample numbers with the samplers initials and date and time of collection.
- Attach an EPA Region 10 sample tag to the 4-ounce glass jar and include the CLP and RTN sample numbers on the tag (as well as samplers initials and date and time of collection). Place a blank EPA custody seal with the 4-ounce jar and tag (to be used by the RAP laboratory) in an unsealed bubble bag.
- Double check the numbers for each series of samples against the chains of custody. Place the quart Ziploc bag containing the soil/sediment sample in gallon Ziploc bag. Place the 4 ounce glass jar, EPA tag, and EPA custody seal in a bubble bag and add this to the gallon Ziploc bag. Place the gallon Ziploc bag in the appropriate cooler.
- Remove the last two pages of the URSG chain of custody and copy the ITR (do not remove any pages from the ITR). Ensure that the six digit number on the bottom right corner of the ITR is retained on the copy (this will be used for reference if questions arise).
- Place both the URSG chain of custody, ITR, and a return Fedex form in a Ziploc bag and tape to the inside lid of the cooler. Add ice to the cooler, custody-seal the cooler lid, and duct-tape the cooler.
- Ship the samples to the designated RAP laboratory (to be assigned). The RAP laboratory will sieve the samples, complete the Inorganic Traffic Report (blocks 4 and 5), and ship the samples to the designated CLP laboratory.
- Notify Todd Goins of each shipment to the RAP laboratory (206-674-1843).

All equipment rinsate samples (estimate 30 samples) will be shipped directly to the CLP laboratory:

- Collect the equipment rinsate samples in a preserved liter high-density polyethylene (HDPE) bottle. Label the bottle with the EPA assigned CLP sample numbers and EPA RTN. Add samplers initials and date and time of collection to the label and custody seal the bottle. Attach an EPA Region 10 sample tag to the bottle and include the CLP and RTN sample numbers on the tag.
- Complete a separate ITR for the equipment rinsates (do not include soil/sediment or tap water samples). Ship these samples on a weekly schedule to the CLP laboratory. Fill out blocks 4 and 5, designating the shipment date and destination.
- Double check the numbers for each equipment rinsate sample against the ITR. Place the bottle in the appropriate cooler.
- Copy the completed ITR (field copy) and remove the top two pages of the ITR and send these to the RSCC. Ensure that the six digit number on the bottom right corner of the ITR is retained on the copy (this will be used for reference if questions arise).
- Ship the samples to the designated CLP laboratory (to be assigned). Shipment for Saturday delivery is not recommended.
- Notify the RSCC of each shipment to the CLP laboratory (Melody Walker 206-553-1106).

EPA assigned CLP tracking information that is required on the ITR and available sample numbers include the following:

- Project Code: TEC-701G
- Account Code: 99T10PGBX102QLA00
- Case Number: to be assigned by the RSCC
- Site Spill ID: 2Q
- RTN assigned by week: to be assigned by RSCC
- CLP tracking numbers: to be assigned by RSCC

### 5.6.2 RAP Sample Handling Requirements

The remaining environmental samples (to be determined) will be submitted to assigned RAP laboratories. The sample number designations will follow standard URSG format and use URSG chain of custody documentation.

- Collect the samples as described in Section 4. Use a URSG chain of custody to document sample collection and request the appropriate analyses (refer to Tables 4-1 and 4-2). Label the sample containers with the appropriate URSG sample number and custody seal the sample container.
- Double check the sample numbers against the chain of custody. Peel off the back two pages of the chain of custody. Ship the samples on a daily schedule to the RAP laboratory and notify Todd Goins of each shipment (206-674-2843).
- Send the last page of the chain of custody and copies of the field forms to URSG on a weekly basis (attn: Denyne McDonald)

<b>URS Greiner</b>	<p align="center"><b>Figure 5-1</b>  <b>Example Monitoring/Sampling Location Summary</b></p>
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<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 1	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 2	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 3	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 4	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 5	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 6	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 7	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 8	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 9	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 10	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 11	

<b>URS Greiner, Inc.</b> 2401 4th Ave., Suite 1000 Seattle, Washington 98121-1459		(206) 647-1800
DATE:		
INSTALLATION:		
LABORATORY:		
ANALYSIS:		
SAMPLE NO: 46936	BOTTLE NO: 12	

**URS Greiner**

**Figure 5-4**  
**Example URSG Sample Label**



Project Code	Month/Day/Year/Time	Tag No 149273	Sampler Name(s) (Please Print)	Station Location / No.	Preservative: Ice <input type="checkbox"/> No <input type="checkbox"/> Chemical: Acid <input type="checkbox"/> Base <input type="checkbox"/> Other <input type="checkbox"/>
					Analyses
					General Chemistry
					BOD Anions Cations Solids (TSS, TDS, SS)
					COD, TOC, Nutrients
					Oil and Grease
					Inorganics
					Metals
					Cyanide
					Organics
					Volatiles
					Semi-volatiles
					Pesticides/PCBs
					PAHs
					Herbicides
					Phenols
					Other (Write In)
CLP No.			Regional Tracking No.		
Remarks:					

U.S. GPO: 1997 - 591 913

SITE NAME/ SAMPLE ID.	ANALYSIS	PRESERVATIVE	DATE	TIME	INT
USE/MATRIX					
<input type="checkbox"/> GRAB <input type="checkbox"/> OTHER <input type="checkbox"/> COMPOSITE					
SampleTrak™ (916) 737-3800					

URS Greiner

Figure 5-5  
Example EPA Sample Tag and Sample Label

<h2>Chain of Custody</h2>					<b>URS Consultants, Inc.</b> 1100 Olive Way, Suite 200 Seattle, WA 98101 (206) 623-1800		CONTACT: _____ PHONE NO.: _____		Page _____ of _____ <div style="font-size: 24pt; font-weight: bold; margin-top: 5px;">URS</div>						
Installation I.D.		CTO No.			<div style="transform: rotate(-45deg); transform-origin: left top; white-space: nowrap;">Analytical Methods</div>										
Site I.D.		Zone I.D.		Sampling Co.											
Air/W No.		Shipping Cont's No.													
Sample Number	Sample Collection		Matk Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL										Remarks
	Date (mm/dd/yy)	Time (24 Hr.)													
Preservation: A = HCL to pH < 2; B = HNO <sub>3</sub> to pH < 2; C = H <sub>2</sub> SO <sub>4</sub> to pH < 2; D = NaOH to pH > 12; E = Other (Specify): _____															
Relinquished by Sampler: (Signature)			Date	Time	Received by: (Signature)			Laboratory:							
Relinquished by: (Signature)			Date	Time	Received by: (Signature)			Contract No.:							
Relinquished by: (Signature)			Date	Time	Received by Lab: (Signature)			Samples Disposed by:			Date	Time			
Matrix Types: A - Air; P - Product; S - Soil; T - Tissue; W - Water Sample Types: ER - Equipment Rinse; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank					Distribution: White = Accompanies Shipment; Green = Disposal Receipt; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy										

**URS Greiner**

**Figure 5-6**  
Example URSG Chain of Custody



## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

Client: URS Greiner  
 Project:  
 Sample Matrix: Sediment

Service Request: K9803127  
 Date Collected: 5/14/98  
 Date Received: 5/16/98

## Total Metals

Sample Name: 46243  
 Lab Code: K9803127-001  
 Test Notes:

Units: mg/Kg (ppm)  
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aluminum	EPA 3050A	6010A	10	2	5/26/98	6/3/98	8140	
Antimony	EPA 3050A	6010A	10	2	5/26/98	6/3/98	ND	
Arsenic	EPA 3050A	7060A	1	2	5/26/98	5/23/98	4	
Barium	EPA 3050A	6010A	1	2	5/26/98	6/3/98	33	
Beryllium	EPA 3050A	6010A	1	2	5/26/98	6/3/98	ND	
Cadmium	EPA 3050A	6010A	1	2	5/26/98	6/3/98	ND	
Calcium	EPA 3050A	6010A	10	2	5/26/98	6/3/98	5540	
Chromium	EPA 3050A	6010A	2	2	5/26/98	6/3/98	6	
Cobalt	EPA 3050A	6010A	2	2	5/26/98	6/3/98	3	
Copper	EPA 3050A	6010A	2	2	5/26/98	6/3/98	3	
Iron	EPA 3050A	6010A	4	2	5/26/98	6/3/98	7250	
Lead	EPA 3050A	7421	1	2	5/26/98	5/27/98	5	
Magnesium	EPA 3050A	6010A	2	2	5/26/98	6/3/98	2760	
Manganese	EPA 3050A	6010A	1	2	5/26/98	6/3/98	121	
Mercury	7471A	7471A	0.2	1	5/29/98	5/31/98	ND	
Nickel	EPA 3050A	6010A	10	2	5/26/98	6/3/98	ND	
Potassium	EPA 3050A	6010A	400	2	5/26/98	6/3/98	921	
Selenium	EPA 3050A	7740	1	2	5/26/98	5/27/98	ND	
Silver	EPA 3050A	6010A	2	2	5/26/98	6/3/98	ND	
Sodium	EPA 3050A	6010A	20	2	5/26/98	6/3/98	73	
Thallium	EPA 3050A	7841	1	2	5/26/98	5/23/98	ND	
Vanadium	EPA 3050A	6010A	2	2	5/26/98	6/3/98	12	
Zinc	EPA 3050A	6010A	2	2	5/26/98	6/3/98	20	

Approved By: \_\_\_\_\_

13 June 98

C:\MSD\K9803127-001 - Sample 01098

Date: 6/10/98

00475

URS Greiner

Figure 5-8  
Example Form 1

**Attachment F**

**Procedure for the Inadvertent Disturbance or Discovery of Spokane Human Remains and Cultural Resources**



# Spokane Tribe of Indians

P.O. Box 100 • Wellpinit, WA 99040 • (509) 258-4581 • Fax 258-9243

CENTURY OF SURVIVAL  
1881 - 1981

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AUG - 9 1999

URS GREINER

## Procedure for the Inadvertent Disturbance or Discovery of Spokane Human Remains and Cultural Resources

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### Introduction:

Because many ground-disturbing processes, both natural and cultural, have the effect of prompting the destruction of evidence of Spokane Tribal heritage, it is the policy of the Spokane Tribe of Indians (hereafter "Spokane Tribe") to leave Spokane human remains and cultural resources in place and undisturbed. Purposeful disturbance of these resources without proper permit and consultation and/or approval of the Spokane Tribe is a violation of federal, Tribal, State, and/or local law. The National Historic Preservation Act (NHPA) and the Native American Graves Protection and Repatriation Act (NAGPRA) require that federal agencies take responsibility for damage to or loss of human burials caused by the project actions or that occur on off-Reservation lands under the management jurisdiction. The Spokane Tribe has been delegated the federal authority as a Tribal Historic Preservation Office for Reservation lands pursuant to Section 101(d)(2) of the National Historic Preservation Act.

### Geographic Area of Applicability:

This procedure for the inadvertent disturbance or discovery of Spokane human remains and cultural resources applies to all lands within the boundaries of the Spokane Indian Reservation and is advisory for all lands within the Spokane Tribe's ceded territory, as determined in proceedings before the Indian Claims Commission. For the purposes of cultural resource management, the ceded territory is bounded by and includes the historic town of Hunters on the northwest, Deer Lake to the north, Mount Spokane to the northeast, Rosalia to the southeast, Ritzville to the southwest, and the historic town of Peach (on the west side of the original mouth of Hawk Creek) to the west.

### Procedure:

In cases of inadvertent disturbance or discovery of Spokane human burials or cultural resources, the following procedure is to be followed:

- (1) Upon inadvertent disturbance or discovery of human burials or cultural resources, any action(s) affecting the burials or resources shall immediately be halted.

- (2) The person(s) making the discovery shall immediately notify the appropriate office of the coroner or police. Upon a determination of the appropriate death investigation authority that the location of the remains is not the result of a crime, the following procedures shall apply.
- (3) The entity making such disturbance or discovery shall notify the land owner, occupant, or manager. If the land occupant or manager is notified in lieu of the land owner, the occupant or manager will immediately notify the land owner.
- (4) The entity making the disturbance or discovery will exert its best effort to protect such remains and/or objects until the land owner and/or land occupant or manager arrives to protect these remains and/or objects. Within 24 hours of notification, the land owner shall supply protection for such remains and/or objects, until disposition or control of such remains and objects has been implemented.
- (5) The entity making the disturbance or discovery will immediately notify the Spokane Tribal Historic Preservation Office, Wellpinit, Washington, in person or by telephone (at 509-258-4060), or by fax (at 509-248-9844), of the disturbance or discovery. The entity is advised to keep written documentation of such contact.
- (6) The Spokane Tribal Historic Preservation Officer or designated representative(s) shall inspect in person the affected site, human remains, or cultural resources, and shall determine, if possible on evidence at the site, oral history, and/or existing records, the cultural affiliation of such site, human remains, and/or cultural resources, or the need for further identification procedures.

A. If the exposed human remains or cultural resources are clearly Native American and have known lineal descendants or owners, the Spokane Tribal Historic Preservation Officer shall notify such lineal descendants within 24 hours. The descendants shall then have the opportunity to make disposition or to take control of such human remains and/or associated funerary objects.

B. If the exposed human remains and/or associated funerary objects are clearly prehistoric or non-modern<sup>1</sup> Native American in origin and have no known lineal descendants, or if the lineal descendants decline disposition or control, the Spokane Tribe, as the Indian Tribe which has the closest cultural affiliation and aboriginally

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<sup>1</sup> For the purposes of this procedure, modern is here defined as less than 50 years old; non-modern is defined as 50 years of age or older. For human remains, the age of such remains is defined as beginning at the death of the individual, to the present.



occupying the area, claims ownership of such human remains and associated funerary objects, and reserves the right to manage the disposition and control of such human remains and/or associated funerary objects as they choose. The Tribe's ownership and right to disposition and control of the human remains and/or associated funerary objects refers to the entire burial, to the extent it can be recovered, and does not allow in any case for separation of part of an individual's remains from other parts or from their associated funerary objects.

C. If the exposed human remains and/or associated funerary objects are historic and non-Native American in origin, the Spokane Tribal Historic Preservation Officer will notify the Washington State Historic Preservation Officer (SHPO). Disposition and control over such burials will be determined the SHPO.

D. If the exposed human remains and/or associated funerary objects are of uncertain or unidentifiable cultural identity, but clearly non-modern in origin, the Spokane Tribal Historic Preservation Officer will use reasonable means, such as professional consultation or laboratory testing, to obtain a determination of cultural identity, although the costs for such determination will be the responsibility of the entity disturbing such remains. After cultural identity has been satisfactorily determined, the disposition or control of such remains and/or objects shall follow as otherwise provided in this procedure.

E. If the exposed human remains and/or associated funerary objects are modern or possibly modern in origin, regardless of cultural affiliation, the Spokane Tribal Historic Preservation Officer will notify the local law enforcement authorities. Disposition and control over such burials will be determined by the law enforcement authorities.

- (7) Within 48 hours of notification, the entity with right of disposition and control shall notify the land owner concerning plans for disposition and control over such objects. Actual disposition and control shall be implemented as soon as possible, although may be delayed if so agreed by the land owner and the entity with right of disposition and control, or if the extent of the damage or other circumstances require delay in disposition and control.

The entity performing any action which inadvertently disturbs or damages Spokane human remains or cultural resources shall be responsible for costs of inspection of the damage by Tribal staff; removal, reburial, and/or restoration of the site; identification of remains; and curation as required to protect and restore the affected human remains or cultural resources. Costs may include but are not limited to staff, equipment, supplies, laboratory costs, and travel. If the entity performing the action which inadvertently disturbs or damages such resource is not also the land

owner, such entity is responsible for reimbursing the land owner for costs incurred by the land owner as a direct result of this procedure. In no case shall the required funding exceed current accepted professional costs for such services, or include costs not associated with the action or resources involved.

The Spokane Tribal Historic Preservation Office shall make best effort to minimize the costs associated with Inadvertent Disturbance or Discovery, especially when the entity involved fully cooperates with preservation and protection efforts; however, appropriate project undertaking funding shall ensure that sufficient measures are taken to complete the activities described in these procedures.

An entity solely reporting human remains or cultural resources to the Spokane Tribe, provided they have not damaged or disturbed such resources, or caused or been responsible for damage or disturbance of such resources, shall not be responsible for any additional costs under this section.

#### **Relationship to Other Applicable Laws:**

Full compliance with all aspects of this procedure shall be considered by the Spokane Tribe as full and complete consultation and cooperation with the Spokane Tribe, as required by law, for the purposes of Inadvertent Disturbance and Discovery of human remains and cultural resources.

#### **Limitations:**

Compliance with this procedure for a particular disturbance or discovery does not constitute consultation and cooperation with the Spokane Tribe on other disturbances or discoveries.

Notification of the Spokane Tribe under this procedure does not release the entity from responsibility for violations of federal, Tribal, state or local law.

#### **Violations:**

Any entity discovering or disturbing any Spokane human remains or cultural resources who does not follow the procedure described here, shall be considered in violation of this procedure. Such action shall be considered deliberate and causing unauthorized damage to the affected resource; this action is subject to prosecution under applicable federal, Tribal, state, and/or local laws.

#### **Recovery of Eroding Human Remains:**

When approval from the appropriate authorities is given for the collection of scattered human remains or recovery of exposed and immediately endangered remains, standard professional practices will be used to ensure that all associated remains and grave goods are recovered, and

that the location is documented to assist future monitoring or management practices. However, those making the recovery shall not open up areas around the burial or discovery with the intention of discovering additional burials and materials or to learn more about the site context. Excavations of this sort are strictly for the salvage of eroding burials.

The methods for documentation are to be consistent with practices employed by the Spokane Tribe, including collection of locational data, controlled excavation of the burial pit, screening of pit fill, and descriptions of burial practices and listing of observed skeletal remains. A professional archaeologist shall be in the field with the burial recovery crew at all times, and shall participate in the documentation of burials in all aspects where their involvement does not violate traditional custom or practices. If permitted by the Spokane, to-scale map documentation of excavated features (i.e., distribution of remains and grave goods in the burial pit) is recommended.

The project entity is responsible for the preparation of a site plan map that shows the locations of surface-visible cultural features, significant topographic features, and other information needed to relocate the site in subsequent years for management purposes. Photographs shall be taken that show the location of excavated burials in relation to identifiable landmarks. Human remains will not be visible in the photograph if not approved by the Spokane Tribe; this authorization will be decided on a case by case basis. The location of unrecovered remains or each excavated grave will be documented on a 7.5' USGS quadrangle topographic map. GPS measurement of location is required.

Recovered human remains and grave goods shall be visually examined to determine cultural affiliation (i.e., if they are Native American or European in origin). For Native American ancestral remains, if desired by the Spokane Tribe, additional non-destructive examination of the remains may be conducted (i.e., determination of age and sex, stature, or to observe pathologies). Associated artifacts and grave goods may also be subjected to examination and documentation if that is approved by the Spokane Tribe. Permission from the Spokane Tribal Business Council for examination and documentation of Native American burials and grave goods, beyond that required to determine if the remains are Native American in origin, shall be gained in writing and a copy of the written approval shall be provided to the contracting professional investigator of the burial(s). Unless the Spokane Tribe chooses to retain exclusive control of topographic sheets showing the locations of burial(s), feature(s), or associated materials, this permission and map shall be included as an exhibit in the project report.

If the remains are Euro-American in ancestry, standard non-destructive analysis shall be completed of remains and any associated grave goods or mortuary materials.

All grave goods shall be stored with the appropriate skeletal remains. Any recovered remains will be boxed according to Tribal standards (appropriate size and material to be decided by Tribal

Elder in consultation); the contracted investigator will retain and protect the burials in their custody until repatriation occurs or, if such would prove necessary after completion of NAGPRA consultations, the Tribe notifies them to deliver the burial(s) to another location. We anticipate that, after completion of notification processes defined in NAGPRA, that Native American remains would be repatriated to Spokane Tribe in Wellpinit, Washington.

**Coordination:**

- The Tribal Historic Preservation Officer, is the primary contact for the Spokane Tribe for notification purposes as well as consultation on matters of cultural patrimony. The phone number is (509)258-4060, FAX (509)258-9844. The THPO shall be immediately notified whenever a human burial or scattered human remains are found on any Reservation or ceded land location.